



City of San Diego

Waste Characterization Study

2012 – 2013 Final Report



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1. Introduction & Summary

Introduction and Study Objectives

The City of San Diego has achieved a recycling rate of 68 percent due to its residential curbside programs, the City Recycling Ordinance (targeting commercial and multifamily generators), and the Construction and Demolition Debris Deposit Ordinance (setting diversion requirements of at least 50 percent for construction, demolition, and remodeling projects). To build on this success and in response to California's statewide recycling goal of 75 percent diversion by 2020, the City contracted with Cascadia Consulting Group to perform a waste characterization study that collected data about the amounts and types of waste that residents, businesses, and military sites dispose.

This data will:

- Support development of enhanced recycling and diversion strategies.
- Measure the impact of recent diversion programs and establish a baseline for future programs.
- Identify materials for additional potential diversion opportunities.
- Provide comparison with the previous 1999 study.

This section presents a project overview and a selection of key project findings. The rest of this report provides more detail about the study, including: a summary of the sampling and sorting methodologies our team used to complete the characterization; detailed composition results and complete key findings; and a comparison of the composition data from this study with data from the 1999 study.

Project Overview

During this three-season study, our team characterized more than 1,500 waste samples from four waste streams and 11 substreams into 90 material types. By waste stream, we characterized:

- 274 disposed city or franchise-collected residential waste samples;
- 366 disposed franchise-collected commercial waste samples;
- 64 disposed military waste samples; and
- 800 disposed self-haul waste samples.

The study also included samples from 12 automated green waste loads (the material list for these samples included 26 material types).

For analytical purposes, we further divided many of the substreams into primary and secondary substreams. Table 2 provides a full list of samples by stream and substream.

The first field season occurred during October 2012, the second during January 2013, and the third during June 2013. All sampling and sorting took place at the Miramar Landfill; however loads destined for other landfills were diverted to Miramar Landfill for sampling.

Depending on the substream, staff used either a hand-sort or visual characterization method to characterize samples. In general, our field team hand-sorted franchise and city-collected samples, and visually characterized self-haul samples.

The project team combined the composition (percent-by-weight) data from these sorts with annual quantity (tonnage) data provided by the City to create the composition and quantity estimates presented throughout this report.

Summary of Findings

Overall Disposed Waste

- Approximately 76% of the City's overall waste is recoverable (41% is Compostable/Potentially Compostable, 17% is Recyclable, and 18% is Potentially Recoverable).
- *Food* (15%), *leaves and grass* (7%), and *palm, succulent, and coral tree* (5%) are the three most prevalent material types; together they represent more than one quarter of the overall disposed waste.
- The prevalence of the **Organics** material classes decreased each season from a high of 43% in October down to 37% in June. This finding is consistent with most of the other waste streams and primary substreams that make up the overall disposed waste. Most other material classes remained reasonably stable throughout each season.
- Compared to 1999, in 2012 **Organics** are a much larger fraction and **Construction and Demolition** are a much smaller fraction of the overall disposed waste.
- The total quantity of waste disposed decreased from nearly 1.7 million tons in 1999 to slightly less than 1.3 million tons in 2012.

Residential Waste

- Nearly 80% of the overall residential waste is recoverable (46% is Compostable/Potentially Compostable, 17% is Recyclable, and 16% is Potentially Recoverable).
- *Food* (18%), *leaves and grass* (9%), and *compostable/soiled paper* (6%) are the three most prevalent material types; together they represent approximately one third of overall residential disposal.
- In the overall residential waste, **Organics** material class exhibited a downward trend over the three field seasons, declining from 53% in October to 45% in June.
- As a proportion of the overall residential disposal, most material classes did not change by more than two percentage points between 1999 and 2012. The exceptions are **Paper**, which decreased by more than 12 percentage points (from more than 30% to less than 18%), and **Organics**, which increased by more than 12 percentage points (from approximately 35% to approximately 48%).
- The proportion of green waste in carts from single family with green waste service accounts and those without green waste service is nearly the same. This suggests that the green waste

service for single family service accounts with this service is either underutilized, or that the level of service (bi-weekly pick-up) is not adequate (see Figure 77).

Commercial Waste

- More than one third of the overall commercial waste stream is Compostable/Potentially Compostable (37%). Combined with the Recyclable materials in the stream (17%) and the Potentially Recoverable materials (20%), nearly three quarters (74%) of the overall commercial waste is recoverable.
- *Food* (13%) is the most prevalent material type and the only material type greater than 6%. The ten most prevalent material types combined account for more than half (55%) of the overall commercial waste.
- The prevalence of individual material classes within the overall commercial waste composition did not substantially vary by season.
- Franchise collected commercial compacted drag-on containers have a higher proportion of Recyclable material than franchise-collected commercial open-top drag-on containers (see **Figure 93** and **Figure 96**).

Military Waste

- Three quarters (75%) of overall military waste is recoverable, primarily Compostable/Potentially Compostable materials (33%), Recyclable materials (21%), and Potentially Recoverable materials (21%).
- *Clean pallets and crates* (12%), *food* (11%), and *other wood waste* (9%) are the three most prevalent materials in the overall military waste stream.
- The prevalence of the **Construction and Demolition** materials in the overall military waste increased each season. Most of the other material classes displayed a downward trend from October to June.
- **Construction and Demolition** is the most prevalent material class in both the 1999 and 2012 study periods, though it decreased sharply from 64% in 1999 to 40% in 2012.
- The self-haul military substream's waste is almost entirely **Construction and Demolition** materials (80%).

Self-haul Waste

- In the overall self-haul waste, the three recoverable waste fractions, Recyclable materials (12%), Compostable/Potentially Compostable materials (27%), and Potentially Recoverable materials (31%) compose more than two thirds (70%) of disposal.
- The overall self-haul waste is comprised primarily of **Construction & Demolition** (59%) materials.
- *Carpet and carpet padding* (12%); *palm, succulent and coral tree* (11%); and *other wood waste* (10%) are the three most prevalent material types; together they represent approximately 33% of the overall self-haul waste.
- There is little seasonal variability in material class composition for the overall self-haul substream. The prevalence of most material classes remained reasonably stable.

Document Map

The remainder of this report is organized in the following sections:

- **Summary of Methodology** defines the four waste streams the green waste stream and summarizes our data collection design, implementation, and analysis methodologies.
- **Study Results** presents key findings and detailed composition results for each of the overall waste streams and several substreams.
- **Appendices** follow the main body of the report. They provide definitions for all material types, a detailed explanation of the methodology, an explanation of composition calculations, examples of field forms, additional composition data, and detailed substream definitions and tonnages.

2. Summary of Methodology

The following section summarizes the three main tasks of the study methodology: Develop Plan, Collect Data, and Analyze Data.

Develop Plan

Step 1. Coordinate with City, Facility, and Hauler Staff

Prior to beginning fieldwork, Cascadia staff met with City of San Diego staff, Miramar Landfill staff, and hauler representatives to plan and coordinate study logistics such as space at the landfill, vehicle selection strategies, and assistance from fee booth staff. Route supervisors from the haulers helped to coordinate route selection and the delivery of selected loads. Facility managers from the landfill helped to coordinate sample delivery, identification, and other details involved with the field data collection effort.

Step 2. Define Waste Streams

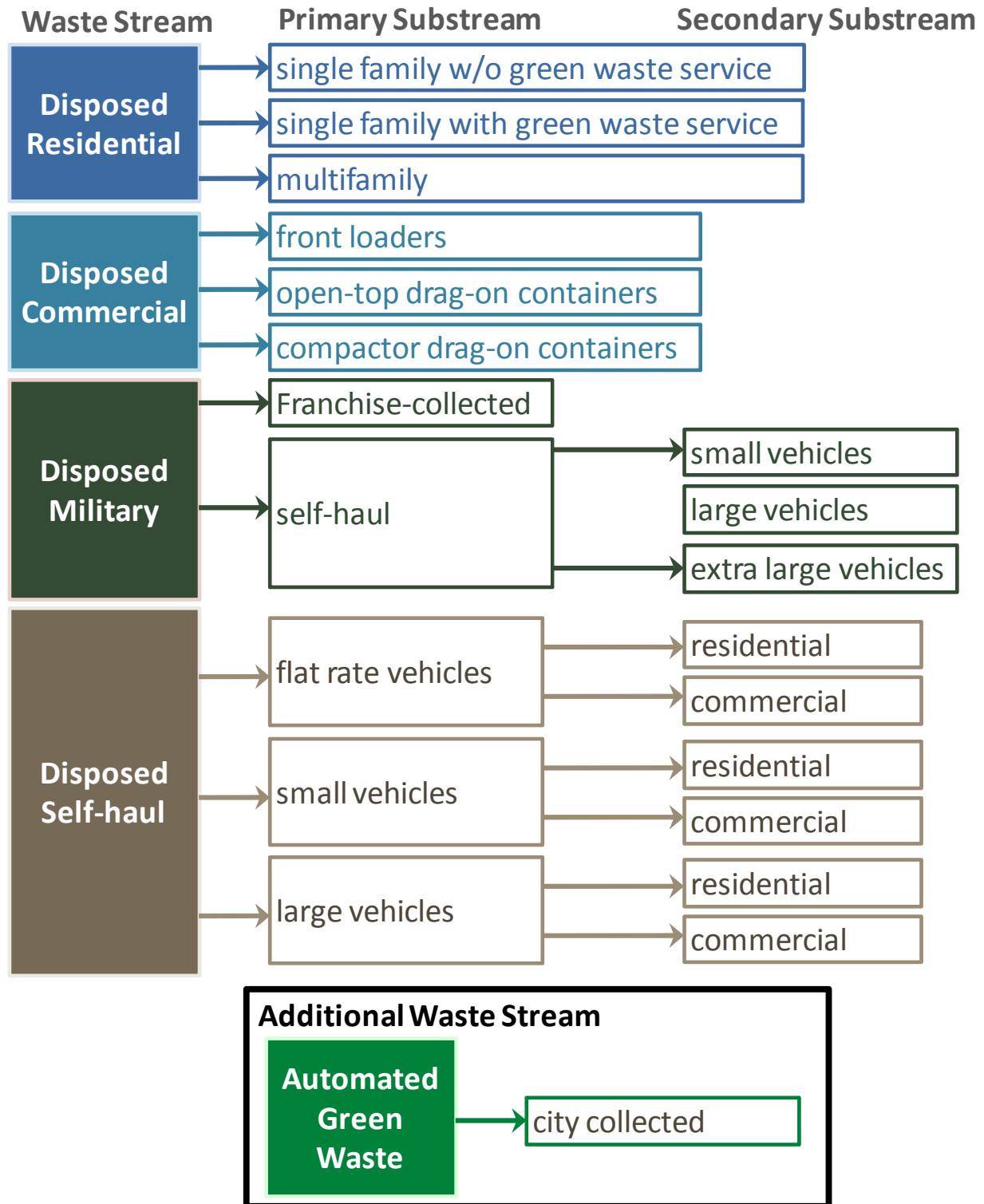
During the kickoff meeting, the project team defined the sampling universe: the four disposed waste streams, the green waste stream, and their associated substreams. The following characteristics define the waste streams, primary substreams, and secondary substreams:

- The **hauler** is the entity delivering the waste to the landfill. This study defined two hauler types: franchise/city-collected and self-haul. Franchise/city-collected includes entities that haul waste as their primary activity. Self-haul includes business and others for whom hauling is incidental – residents, contractors, landscapers, and junk collectors.
- The **generator** is the entity creating the waste. This study defined five generators: single family residential with green waste service, single family residential without green waste service, multifamily residential, commercial, and military.
- The **origin** designates whether the waste was generated inside or outside of San Diego city limits.
- The **vehicle type** designates the mode of transportation the hauler used to deliver the load to the landfill. This study defined seven vehicle types: front load packer trucks, open-top drag-on containers, compacted drag-on containers, flat rate vehicles, small vehicles, large vehicles, and extra large vehicles.
- Two **groups of materials** are included in the study – refuse and source separated green waste.

Some substreams are defined by fewer than the five possible characteristics. For example, the multifamily substream is defined by two characteristics – franchise-collected and generated at multifamily residences. Not every combination is used, for example the extra large vehicle type is only used in the military self-haul substream.

See Figure 1 for a summary of the included waste streams and substreams. The detailed definition for each substream can be found in Appendix G: Detailed Substream Descriptions and Tonnage Allocations.

Figure 1. Waste Streams and Substreams



Step 3. Define Materials

Cascadia worked with City staff to identify material types and definitions for this study. This list was based on CalRecycle's standard list of materials, with changes to reflect this project's objectives and local solid waste management practices. The field crew sorted the disposed samples into 90 unique material types which are divided among ten material classes: **Paper, Plastic, Glass, Metal, Electronics, Organic, Construction & Demolition, Household Hazardous Waste, Special Waste, and Mixed Residue.**

To identify additional diversion opportunities, the project team also organized material types into four recoverability groups:

- **Recyclable** – Materials for which recycling technologies, programs, and markets are well developed, readily available, and currently utilized.
- **Compostable/Potentially Compostable** – Organic materials typically accepted for use in commercial compost or digestion systems.
- **Potentially Recoverable** – Materials for which recycling technologies, programs, and markets exist, but are either not well developed or not currently utilized. Examples include *carpet & carpet padding*, and *paint*. These materials may also need source reduction, redesign, or producer responsibility programs to be recoverable.
- **Other Materials** – Materials that are not readily recyclable or face other market-related barriers. These materials may need source reduction, redesign, or producer responsibility programs to be recoverable.

Table 1 shows the organization of material types into recoverability groups. The recoverability groups are based on infrastructure at the time of the report, and the team expects that the interpretation of these groups will change as new technologies and programs become available. Additionally, each material type in the groups might have its own set of unique circumstances, so these groups should be used more as useful summaries than fixed data points. Please refer to Appendix B: Material Type Definitions for the division of material types into material classes, and for material type definitions.

Table 1. Potentially Recoverable Materials

Recyclable	Compostable/Potentially Compostable	Other Materials
Uncoated Corrugated Cardboard Paper Bags Newspaper White Ledger Paper Mixed Waste Paper Magazines Phone Books and Directories Aseptic/Milk Containers CRV Clear Glass Bottles Non-CRV Clear Glass Bottles and Containers CRV Brown Glass Bottles Non-CRV Brown Glass Bottles and Containers CRV Other Colored Glass Bottles Non-CRV other Colored Glass Bottles and Containers Tin/Steel Cans Major Appliances Other Ferrous Metal CRV Aluminum & Tin Cans Non-CRV Aluminum Cans Used Oil Filters Other Non-Ferrous Metal CRV HDPE Containers Non-CRV HDPE Containers CRV PETE Containers Non-CRV PETE Containers Miscellaneous Plastic Containers Concrete Asphalt Paving Oil-Based Paint Water-Based Paint	Waxed Corrugated Cardboard Compostable/Soiled Paper Compostable Biodegradable Plastic Containers Food Palm, Succulent, Coral Tree Leaves and Grass Prunings and Trimmings Branches and Stumps Agricultural Crop Residues Grass Sod Manures Clean Dimensional Lumber Clean Pallets and Crates Potentially Recoverable Plastic Grocery and Merchandise Bags Clean Film Plastic Durable Plastic Items Textiles Asphalt Composition Shingles Clean Engineered Wood Clean Gypsum Board Carpet & Carpet Padding Rock, Soil and Fines Vehicle and Equipment Fluids Used Oil Lead-Acid Batteries Household Batteries CFL, Fluorescent Tube and Other Mercury-Containing Bulky Items Tire Brown Goods CRT Computer-Related Electronics Other Consumer Electronics	Remainder/Composite Paper Flat Glass Remainder/Composite Glass Remainder/Composite Metal Dirty Film Plastic Expanded Polystyrene Remainder/Composite Plastic Diapers Remainder/Composite Organics Roofing Tar Paper/Felt Roofing Mastic Built-Up Roofing Other Asphalt Roofing Material Other Wood Waste Painted/Demolition Gypsum Board Contaminated Soil, Street Sweepings, Drain Cleaning Remainder/Composite C&D Sharps Pharmaceuticals Remainder/Composite Household Hazardous Ash Sewage Solids Industrial Sludge Treated Medical Waste Remainder/Composite Special Waste Mixed Residue

Step 4. Schedule Field Work and Allocate Samples

The project team scheduled three seasons of field work: October 2012, January 2013, and June 2013. Each season spanned approximately 15 days, including one Saturday, with samples approximately evenly divided between seasons and days of the week. Sampling dates for each season were scheduled to avoid sampling near or on major holidays.

The project team developed the initial sample allocation plan to provide reliable data at the primary substream level. There were several factors that influenced the sample allocation, including the relative variability of waste from each of the streams and the availability of loads. For example, a greater number of samples were allocated to the more variable commercial and self-haul streams than to the less variable residential stream. Additionally, more samples were allocated to the self-haul, flat rate vehicle substream than to the self-haul, large vehicle substream because self-haul flat rate vehicles are more common than self-haul large vehicles. We did not set sample goals for secondary substreams because they were defined after the completion of sampling and were used for analysis only. Our sample allocation methodology follows the standard waste characterization protocol developed by CalRecycle, California's solid waste management governing body.

Table 2 summarizes the planned and actual number of samples collected for each season.

Table 2. Planned Vs. Actual Samples Collected 2012-2013

Waste Stream	Substream	October		January		June		Total	
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Residential	Single Family w/o Green Waste Service	30	30	30	31	30	30	90	91
Residential	Single Family with Green Waste Service	30	30	30	30	30	30	90	90
Residential	Multifamily	30	30	30	33	30	30	90	93
Commercial	Front Loader	40	43	40	43	40	40	120	126
Commercial	Open-top Drag-on Containers	40	40	40	40	40	40	120	120
Commercial	Compactor Drag-on Containers	40	40	40	40	40	40	120	120
Military	Franchise-collected	10	10	10	12	10	10	30	32
Hand Sort Subtotal		220	223	220	229	220	220	660	672
Self-haul	Flat Rate Vehicle	125	122	119	124	119	128	363	374
Self-haul	Small Vehicles	90	92	85	92	85	74	260	258
Self-haul	Large Vehicles	52	54	49	51	49	63	150	168
Military	Self-haul	0	0	14	13	14	19	28	32
Self-haul Visual Total		267	268	267	280	267	284	801	832
Green Waste		4	4	4	4	4	4	12	12
Total		491	495	491	513	491	508	1,473	1,516

Collect Data

Step 1. Select and Survey Loads

For this study, the load selection procedure varied by substream. Loads from substreams with regularly scheduled waste collection were pre-selected for sampling. Staff at the fee booth selected self-haul loads, military loads, and commercial drag-on containers on the day of sorting using a systematic selection procedure (selecting every n^{th} vehicle). A City staff person was on-site at the landfill each day to assist with the vehicle selection process. Their role included keeping track of progress towards the daily sampling goals, notifying the field crew when selected vehicles passed through the fee booth, and coordinating with haulers to ensure the timely arrival at the landfill of pre-selected vehicles.

For a full description of each sample selection procedure, refer to Appendix C: Study Design. Examples of all field forms our team used for data collection are included in Appendix E: Example Field Forms.

Pre-Selected Loads

The project team used route data from both the City of San Diego and major haulers to pre-select for sampling random single family, multifamily, and commercial front loader routes. We selected routes in each substream for each day using Microsoft Excel's random number generator. For routes that required multiple trips to the landfill to complete, the project team considered each load for each route as separately eligible for pre-selection.

Cascadia summarized selected loads on a separate *Vehicle Selection Sheet* for each sampling day. Before each sampling season, we distributed the *Vehicle Selection Sheets* and bright pink *Sample Placards* for each pre-selected load to hauler and City collections route supervisors. Each day, route supervisors distributed *Sample Placards* and any special collection instructions to the drivers of the pre-selected

loads. Drivers placed the bright pink *Sample Placards* on their vehicle's dashboard so the field team could easily identify each pre-selected vehicle as it arrived at the landfill.

The study was designed to sample pure loads of multifamily and commercial waste. The haulers and City staff worked together to ensure delivery of pure loads on sampling days by modifying routes that were normally a mix of commercial and multifamily residential.

Systematically Selected Loads

Fee booth staff selected self-haul loads, commercial open-top containers, and military loads using a systematic selection process. The fee booth staff completed a brief interview with the driver of each vehicle arriving at the landfill to determine which substream the load belonged to. The staff kept track of the number of vehicles arriving from each substream on the *Vehicle Selection Sheet* and selected every n^{th} vehicle from each substream for sampling. The sampling interval (n) was determined for each substream by dividing each day's expected vehicle count in that substream by the number of samples needed in that substream on that day. The City provided expected vehicle numbers based on historical traffic data at the landfill.

Cascadia provided fee booth attendants with a *Vehicle Selection Sheet*, *Sample Placards*, and instructions for the systematic selection process. When a vehicle was selected for sampling, the attendant noted the vehicle type, generator type, and waste type on a *Sample Placard* and placed the *Sample Placard* on that vehicle's windshield or asked the driver to place it on the vehicle dashboard. The attendant directed selected loads to the designated sampling area.

Step 2. Collect and Sort Samples

Depending on the substream, Cascadia field staff either hand-sorted or visually characterized samples. Both of these methods are summarized below. For a full description of each method, refer to Appendix C: Study Design. For full list of material components and definitions used in the characterization field work, refer to Appendix B: Material Type Definitions.

Hand-sort Method

Field staff hand-sorted all loads of city-collected residential refuse, franchise-collected commercial and multifamily refuse, and military contract hauler refuse. When a selected vehicle arrived at the landfill face, the field crew manager collected the *Sample Placard*, verified the information noted on the *Sample Placard*, and instructed the selected vehicle to the proper tipping location. After the vehicle dumped its load, the field crew manager superimposed an imaginary 16-cell grid over the dumped material, identified a sample from a pre-selected random cell (noted on the *Sample Placard*), and used a small loader to extract this sample from the load. Field crew staff photographed each sample, sorted the material into 90 different material types, and recorded the weight for each sorted material type into the *Hand Sort Tally Sheet*. Each sample weighed at least 200 pounds and the average sample weighed 242 pounds.

Figure 2. Overview of Hand Sort Process



To characterize city-collected green waste loads, our field crew used a modified hand sort procedure and material list. Rather than extracting a 200 pound sample of material from the load for sorting, the field crew sorted entire green waste loads with the assistance of loader, removing and weighing only contaminant materials. The list of contaminant material types for green waste loads is included in Appendix B: Material Type Definitions.

Visual Characterization Method

A trained crewmember characterized all self-haul samples using volumetric-based visual estimations. When a selected vehicle arrived at the landfill face, the field crew manager collected the *Sample Placard* from the driver, verified the information noted on the *Sample Placard*, and instructed the selected vehicle to the proper tipping location. After the vehicle dumped its load, the crewmember photographed the load and measured the load volume with a measuring tape. A trained crewmember used a seven-step process to visually characterize self-haul loads as described in detail in Appendix C: Study Design.

The visual characterization method is most appropriate for samples where materials are bulky, layered, or distributed heterogeneously throughout the load. Under these circumstances, a 200 pound grab sample may not be representative of the entire load. Because self-haul samples are comprised primarily of bulky items, green waste, or construction materials, the visual characterization method is more appropriate, and more efficient, than hand sorting.

The visual characterization method uses industry standard density conversion factors to convert composition-by-volume estimates to composition-by-weight estimates. The conversion factors used are included in Appendix D: Waste Characterization Calculations.

Step 3. Determine Annual Waste Quantities

The project team used fee booth tonnage records and historical vehicle survey data to estimate the tonnage of incoming materials from each primary and secondary substream. The tonnage data is based on January 2012 to December 2012, the most recent full year of data available. For tables presented throughout the main body of the report, the residential and commercial waste stream tables only include refuse tonnages from within the City of San Diego. The military and self-haul samples include loads from both within San Diego and from other areas in San Diego County.

The sampling excluded residuals from the local recycling and C&D processing facilities. However, the overall residential and overall commercial composition tables, include the tonnages from these facilities as a line item to ensure that all disposed tons are accounted for when reconciling the composition data with the City's 2012 disposal tonnage records.

Table 3. Disposal by Primary Substream, 2012

Substream	Tons	Percent of Disposal
Single Family w/o Green Waste Service	107,310	8.3%
Single Family with Green Waste Service	199,291	15.4%
Multifamily	250,661	19.4%
Curbside Recycling Residue	10,422	0.8%
Residential Subtotal	567,684	44.0%
Front Loader	225,076	17.4%
Open-top Drag-on Containers	128,529	10.0%
Compactor Drag-on Containers	106,249	8.2%
C&D Processing Residue	14,993	1.2%
Commercial Subtotal	474,847	36.8%
Military Franchise-collected	21,480	1.7%
Military Self-haul	3,497	0.3%
Military Subtotal	24,977	1.9%
Flat Rate Vehicle	74,696	5.8%
Small Vehicles	39,615	3.1%
Large Vehicles	109,139	8.5%
Self-haul Subtotal	223,450	17.3%
Total Disposal	1,290,958	100.0%

Substream amounts may not sum to waste stream subtotals due to rounding.

Appendix G: Detailed Substream

Descriptions and Tonnage Allocations includes a detailed breakdown of the tonnage allocations, including the assumptions used to allocate tonnages. Tonnages for each primary substream and the residuals are summarized in Table 3.

Analyze Data

Cascadia field staff reviewed all field forms daily to identify any unusual or missing entries and resolve them immediately. After field work, Cascadia staff entered all collected data into a customized database twice to prevent data entry errors, and rectified any discrepancies between the two entries (see Figure 3 for a screenshot of the data entry database).

The project team developed detailed estimates of waste composition and quantities for each substream using the tonnage data the City provided and the methods described in Appendix D: Waste Characterization Calculations.

Figure 3. Screenshot of Data Entry Database

The screenshot shows a web-based data entry interface titled "Entry1". The interface is divided into several sections:

- Left Sidebar (Purple):** Contains a "Data Entry - Hand Sort" section with fields for "Site:" (Miramar Landfill), "Date:" (6/10/2013), "Weather - check if bad:" (checkbox), "Study Period:" (2012), "Season:" (Spring), "Schedule ID:" (37), and "Site Notes" (a large text area). At the bottom is a "Go to Site:" section with navigation buttons.
- Main Form Area (Yellow):**
 - Field Sample No.:** 6FY3216
 - Tally Sample Wt.:** (empty field)
 - Survey Information / Materials:**
 - Jurisdiction:** City
 - Survey No.:** 2147
 - Vehicle Type:** Packer Truck
 - Truck #:** 815218
 - Route #:** 2406
 - Sharps Count:** 54
 - Load #:** 3
 - Buttons:** "ENTER SORT WEIGHT DATA FOR THIS SURVEY" (highlighted with a green box), "Go to survey:" with "Last", "Next", and "New" buttons, and a "STOP" button.
 - Comments:** A large text area for notes.
- Bottom Bar:** Contains record navigation controls. The top bar shows "Record: 19 of 41" and the bottom bar shows "Record: 37 of 45". Both bars include "No Filter" and "Search" buttons.

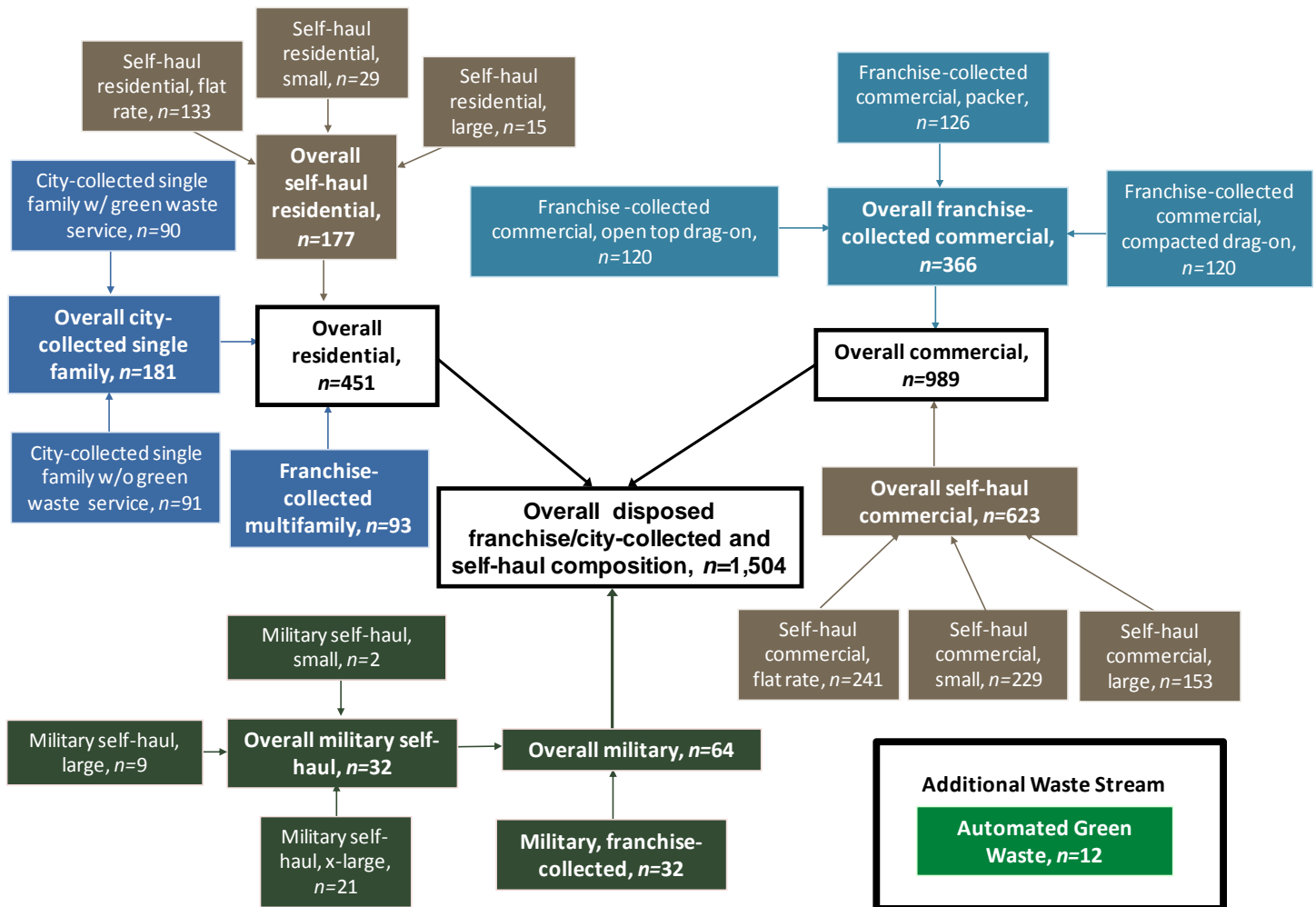
Changes from the Original Study Design

The project team made several small changes to the original study design over the course of the project. These changes were intended to ensure that the study met its objectives as outlined in the Introduction & Summary. The changes are summarized below.

- Military self-haul vehicles arrive infrequently at the landfill, but the composition of those loads is of interest to the project team to create a complete picture of military waste. Prior to beginning the second season, the project team redefined the substreams to create a military self-haul substream, and adjusted the sampling goals accordingly. Because the loads arrive infrequently, the field team selected for sampling every military self-haul load.
- The original green waste samples material list included ten contaminant types. However, during green waste sorting, the project team realized that the original list was insufficient to capture the variety of contaminants in green waste loads. The project team created and implemented a revised material list, and the field crew sorted all 12 green waste samples according to the revised green waste material list.
- The project was originally designed to provide composition data for four waste streams, their associated primary substreams, and the automated green waste (see Figure 1). During analysis, the project team also calculated composition results for an expanded set of secondary

substreams (primarily by further delineating the self-haul samples by generator type into residential self-haul and commercial self-haul). When selecting vehicles, the fee booth collected the information necessary to parse the samples into these more detailed secondary substreams. However, because the study was not designed to provide composition data at this level of detail, the study design did not set targets for the secondary substreams, and consequently some of the secondary substreams have very few samples. This affects the precision level of the results in the secondary substreams. The expanded sample stratification is illustrated in Figure 4. Composition data for substreams noted with bold text are included in the main body of the report. Composition data for the other substreams are included in Appendix F: Additional Composition Data.

Figure 4. Diagram of Expanded Sample Stratification



3. Study Results

Interpreting the Results

This report presents waste characterization results in three ways:

- First, two pie charts present an overview of waste composition by **Material Class** and by recoverability group. The Recyclable, Compostable/Potentially Compostable, and Potentially Recoverable groups are collectively referred to as recoverable.
- Next, the 10 most prevalent individual *material types*, by weight, are shown in a table.
- Finally, a detailed table lists the full composition and quantity results for the 90 *material types*. Please refer to Appendix B: Material Type Definitions for a list of definitions for *material types* used in the study.

A bar chart comparing the seasonal waste composition data by material class is also included for each of the overall waste streams and primary substreams.

Means and Error Ranges

The data from the characterization process were treated with a statistical procedure that provided two kinds of information for each of the *material types*:

- The percent-by-weight estimated composition of waste and
- The degree of precision of the composition estimates.

All estimates of precision were calculated at the 90% confidence level. An explanation of these calculations appears in Appendix D: Waste Characterization Calculations.

The example below illustrates how the results can be interpreted. In this example, the best estimate of the amount of *food* present in San Diego's waste is 15.0%. The plus or minus figure 0.8% reflects the precision of the estimate. When calculations are performed at the 90% confidence level, we are 90% certain that the true amount of *food* is between 15.0% plus 0.8% and 15.0% minus 0.8%. In other words, we are 90% certain that the true amount of *food* lies between 14.2% and 15.8%.

Material Type	Estimated Percent	+ / -
Food	15.0%	0.8%

Error Range (+/-)

The error range is a measure of the spread of values (variability) in a collection of data. For instance, if the quantities of *newspaper* were found to be nearly the same in each of the 1,504 refuse samples collected for this study, the result would be a very narrow error range. By contrast, if some samples were comprised of 75% *newspaper* and others were 0% *newspaper*, the results would show a much broader error range. In some cases the error range is larger than the estimated mean which leads to a negative number when the error range is subtracted from the mean. In these cases the true amount can be considered to be between 0.0% and

Rounding

When interpreting the results presented in the tables and figures in this report, it is important to consider the **effect of rounding**.

To keep the waste composition tables and figures readable, estimated tonnages are rounded to the nearest ton, and estimated percentages are rounded to the nearest tenth of a percent. Likewise, text references to the tables round the estimated percentages to the nearest percent. Due to this rounding, the **tonnages** presented in the report, when added together, may not exactly match the subtotals and totals shown in the tables. Similarly, the **percentages**, when added together, may not exactly match the subtotals or totals shown in the tables. Percentages less than 0.05% are shown as 0.0%.

It is important to recognize that the tons throughout the report were calculated using the non-rounded percentages. Therefore, using the rounded percentages from the tables to calculate tonnages may yield tonnages that are slightly different than those shown in the report.

For example, the rounded percentage for *food* in Table 5 is shown as 15.0%, while the more precise number, 14.99443313444%, was used in calculations. Similarly the total, non residuals disposed tonnage is shown as 1,265,543, slightly less than the actual value of 1,265,543.37. Using the more precise numbers, *food* is calculated to be 189,761 tons (as shown in Table 5) which is slightly less than the 189,831 tons we would get if we calculated using the rounded numbers (15.0%, 1,265,543 tons).

Overall Waste Streams

Overall Disposed Waste

The overall disposed waste composition is based on all 1,504 disposed waste samples.

Key Findings

As shown in Figure 5, more than 76% of the City's overall waste is recoverable (41% is Compostable/Potentially Compostable, shown in purple, 17% is Recyclable, shown in blue, and 18% is Potentially Recoverable, shown in green).

The waste composition data by material class are presented in Figure 6. **Organics** (39%) and **Construction and Demolition** (25%) are the two most prevalent material classes.

Figure 5. Composition by Recoverability Group, Overall Disposed Waste, 2012

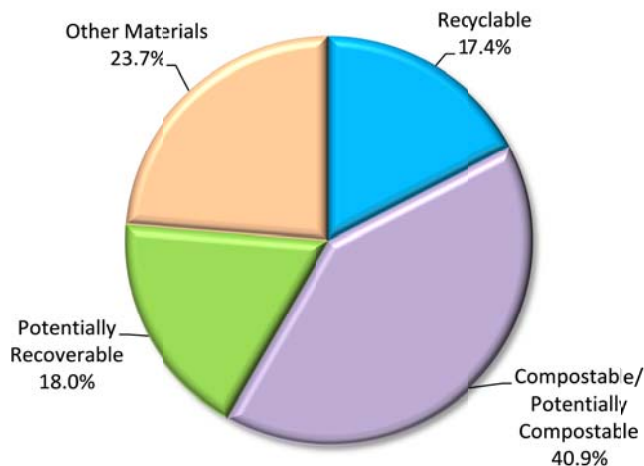
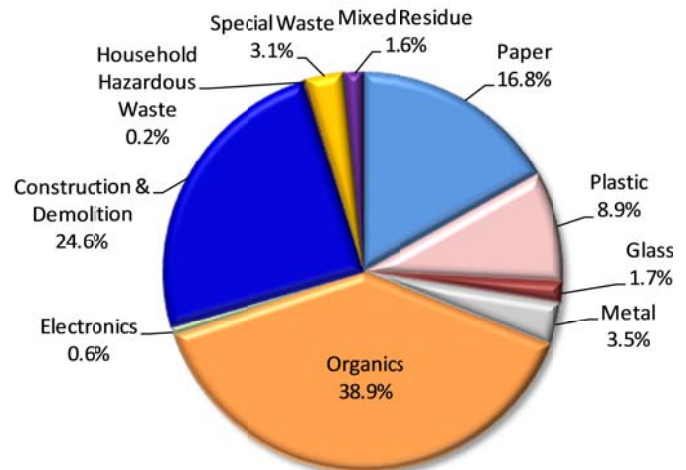


Figure 6. Composition by Material Class, Overall Disposed Waste, 2012



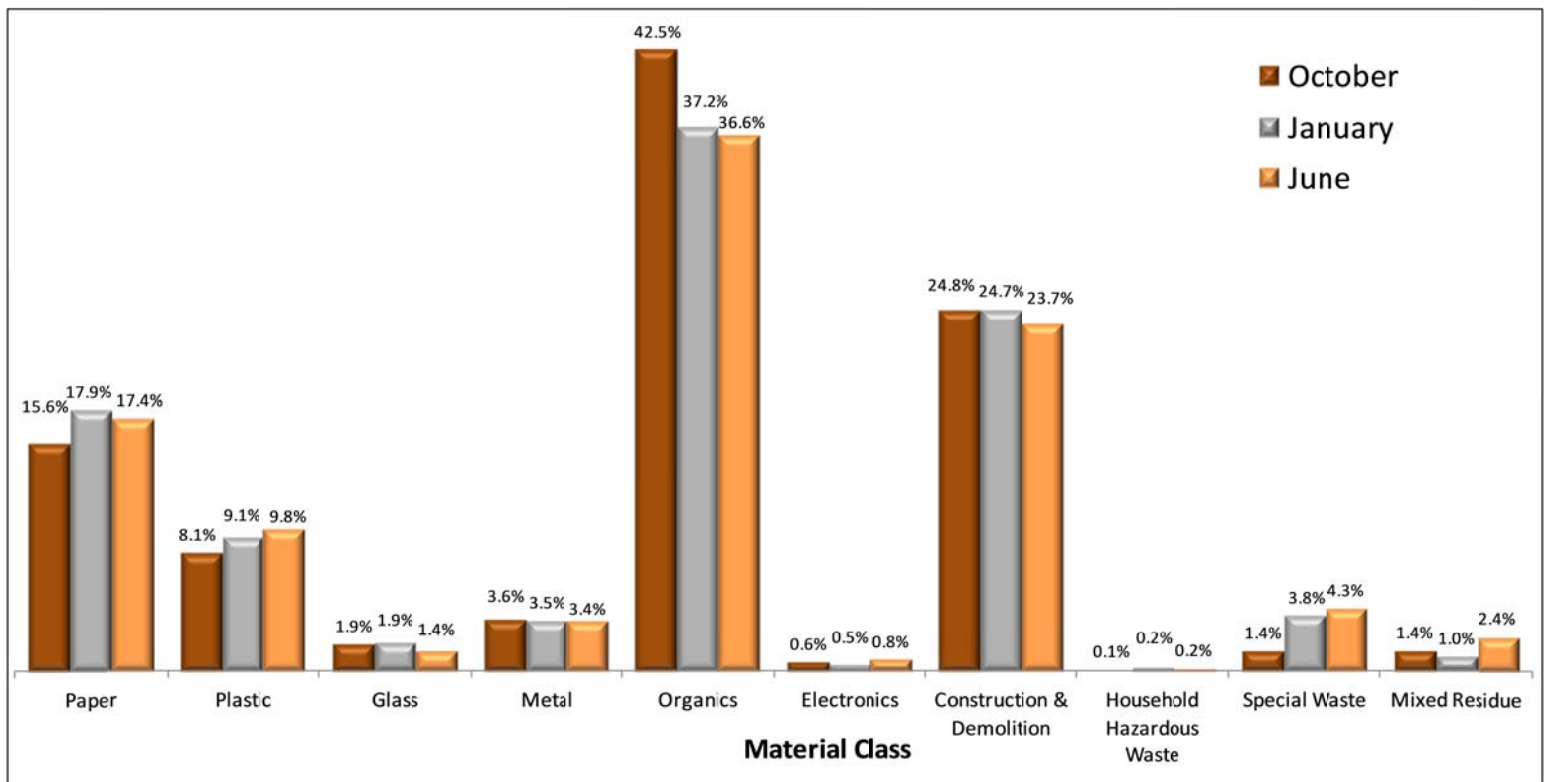
The ten most prevalent disposed materials can be found in Table 4. As shown, *food* (15%), *leaves and grass* (7%), and *palm, succulent, and coral tree* (5%) are the three most prevalent material types; together they represent more than 27% of the overall disposed waste stream.

**Table 4. Ten Most Prevalent Disposed Material Types,
Overall Disposed Waste, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	15.0%	15.0%	189,761
Leaves and Grass	6.8%	21.8%	85,871
Palm, Succulent, Coral Tree	5.3%	27.1%	66,995
Compostable/Soiled Paper	5.2%	32.3%	65,756
Other Wood Waste	5.1%	37.4%	64,551
Uncoated Corrugated Cardboard	4.6%	42.0%	58,286
Carpet & Carpet Padding	4.2%	46.1%	52,562
Remainder/Composite C&D	3.7%	49.9%	47,264
Prunings and Trimmings	3.5%	53.4%	44,515
Textiles	3.4%	56.8%	42,929
Subtotal	56.8%		718,490
All other material types (excluding residuals)	43.2%		547,053
Total (excluding residuals)	100.0%		1,265,543

Figure 7 illustrates the overall disposed waste's seasonal composition by material class. The prevalence of the **Organics** material classes decreased each season from a high of 43% in October down to 37% in June. This finding is consistent with most of the other waste streams and primary substreams that make up the overall disposed waste. Most material classes remained comparatively stable throughout each season.

Figure 7. Seasonal Composition by Material Class, Overall Disposed Waste, 2012



The detailed composition of the overall disposed waste is shown in Table 5.

Table 5. Detailed Waste Composition, Overall Disposed Waste, 2012

Material	Estimated		Estimated Tons	Material	Estimated		Estimated Tons
	Percent	+ / -			Percent	+ / -	
Paper	16.8%		213,223	Electronics	0.6%		7,909
Uncoated Corrugated Cardboard	4.6%	0.4%	58,286	Brown Goods	0.3%	0.1%	4,217
Waxed Corrugated Cardboard	0.3%	0.1%	4,008	CRT	0.1%	0.1%	847
Paper Bags	0.3%	0.1%	3,601	Computer-Related Electronics	0.0%	0.0%	395
Newspaper	0.8%	0.1%	10,455	Other Consumer Electronics	0.1%	0.1%	1,643
White Ledger Paper	0.9%	0.1%	11,387	Video Display Devices (non-CRT devices)	0.1%	0.1%	806
Mixed Waste Paper	2.9%	0.2%	36,523				
Magazines	0.6%	0.1%	7,232	Construction & Demolition	24.6%		311,649
Phone Books and Directories	0.0%	0.0%	522	Concrete	1.8%	0.5%	22,668
Compostable/Soiled Paper	5.2%	0.3%	65,756	Asphalt Paving	0.3%	0.3%	3,460
Aseptic/Milk Containers	0.1%	0.0%	1,619	Asphalt Composition Shingles	0.3%	0.1%	3,360
Remainder/Composite Paper	1.1%	0.1%	13,832	Roofing Tar Paper/Felt	0.3%	0.2%	3,322
				Roofing Mastic	0.0%	0.0%	28
Plastic	8.9%		112,806	Built-Up Roofing	0.2%	0.2%	2,008
CRV HDPE Containers	0.0%	0.0%	265	Other Asphalt Roofing Material	0.1%	0.1%	1,109
Non-CRV HDPE Containers	0.4%	0.1%	5,332	Clean Dimensional Lumber	1.2%	0.2%	14,725
CRV PETE Containers	0.2%	0.0%	2,923	Clean Engineered Wood	1.0%	0.3%	13,241
Non-CRV PETE Containers	0.2%	0.0%	2,940	Clean Pallets and Crates	2.2%	0.4%	27,661
Compostable Biodegradable Plastic Containers	0.0%	0.0%	121	Other Wood Waste	5.1%	0.6%	64,551
Miscellaneous Plastic Containers	0.6%	0.0%	7,674	Clean Gypsum Board	0.6%	0.2%	7,066
Plastic Grocery and Merchandise Bags	0.3%	0.0%	3,459	Painted/Demolition Gypsum Board	1.1%	0.3%	13,566
Clean Film Plastic	0.6%	0.1%	7,593	Carpet & Carpet Padding	4.2%	0.7%	52,562
Dirty Film Plastic	2.6%	0.2%	32,594	Rock, Soil and Fines	2.3%	0.5%	28,955
Durable Plastic Items	2.3%	0.3%	28,492	Contaminated Soil, Street Sweepings, Drain Cleaning	0.5%	0.6%	6,102
Expanded Polystyrene	0.5%	0.1%	6,430	Remainder/Composite C&D	3.7%	0.5%	47,264
Remainder/Composite Plastic	1.2%	0.2%	14,981				
				Household Hazardous Waste	0.2%		2,157
Glass	1.7%		21,903	Oil-Based Paint	0.0%	0.0%	384
CRV Clear Glass Bottles	0.2%	0.0%	2,222	Water-Based Paint	0.0%	0.0%	497
Non-CRV Clear Glass Bottles and Containers	0.3%	0.0%	3,453	Vehicle and Equipment Fluids	0.0%	0.0%	10
CRV Brown Glass Bottles	0.2%	0.0%	2,421	Used Oil	0.0%	0.0%	37
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	541	Lead-Acid Batteries	0.0%	0.0%	271
CRV Other Colored Glass Bottles	0.1%	0.0%	985	Household Batteries	0.0%	0.0%	166
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.0%	2,407	Sharps	0.0%	0.0%	12
Flat Glass	0.3%	0.1%	3,965	Pharmaceuticals	0.0%	0.0%	173
Remainder/Composite Glass	0.5%	0.2%	5,909	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	116
				Remainder/Composite Household Hazardous	0.0%	0.0%	490
Metal	3.5%		44,276				
Tin/Steel Cans	0.5%	0.1%	5,976	Special Waste	3.1%		39,056
Major Appliances	0.1%	0.1%	1,028	Ash	0.0%	0.0%	68
Other Ferrous Metal	1.2%	0.2%	15,127	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.0%	1,689	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	468	Treated Medical Waste	0.0%	0.0%	182
Used Oil Filters	0.0%	0.0%	185	Bulky Items	1.9%	0.4%	24,053
Other Non-Ferrous Metal	0.6%	0.1%	7,602	Tire	0.6%	0.3%	7,468
Remainder/Composite Metal	1.0%	0.2%	12,200	Remainder/Composite Special Waste	0.6%	0.2%	7,284
Organics	38.9%		492,329	Mixed Residue	1.6%		20,238
Food	15.0%	0.8%	189,761	Mixed Residue	1.6%	0.3%	20,238
Palm, Succulent, Coral Tree	5.3%	0.8%	66,995				
Leaves and Grass	6.8%	0.7%	85,871	Total	100.0%		1,265,543
Prunings and Trimmings	3.5%	0.5%	44,515				
Branches and Stumps	0.7%	0.2%	8,984	Curbside Residential Recycling Processing Residuals			10,422
Agricultural Crop Residues	0.0%	0.1%	502	C&D Processing Residuals			14,993
Grass Sod	0.6%	0.5%	8,141				
Manures	0.0%	0.0%	619	Total Including Residuals			1,290,958
Diapers	1.9%	0.2%	24,073				
Textiles	3.4%	0.3%	42,929	Sample Count			1,504
Remainder/Composite Organics	1.6%	0.2%	19,939				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Overall Residential Waste

The project team hand sorted 181 samples of city-collected single family refuse and 93 samples of franchise-collected multifamily refuse. The field crew also visually characterized another 177 samples from the disposed residential self-haul substream for a total of 451 samples from the overall residential waste stream. The city-collected and franchise-collected were refuse generated in San Diego. The self-haul samples were either refuse or C&D materials generated both inside and outside the City limits. The substreams used to create the composition tables and their associated tonnages are shown in Table 6.

Table 6. Included Substreams and Tons, Overall Residential Waste

Included Substreams	Tons
City Collected Single Family w/o Green Waste Service	107,310
City Collected Single Family with Green Waste Service	199,291
Franchise Collected Multifamily	250,661
Residential Self-haul Flat Rate Vehicles	34,230
Residential Self-haul Small Vehicles	6,153
Residential Self-haul Large Vehicles	2,008
Total Disposal in Substream	599,653

Key Findings

The key recoverability and material class findings for the overall residential waste are shown in Figure 8 and Figure 9, respectively. Nearly 80% of the City's overall residential waste is recoverable (46% is Compostable/Potentially Compostable, 17% is Recyclable, and 16% is Potentially Recoverable). **Organics** (48%) and **Paper** (17%) are the two most prevalent material classes.

Figure 8. Composition by Recoverability Group, Overall Residential, 2012

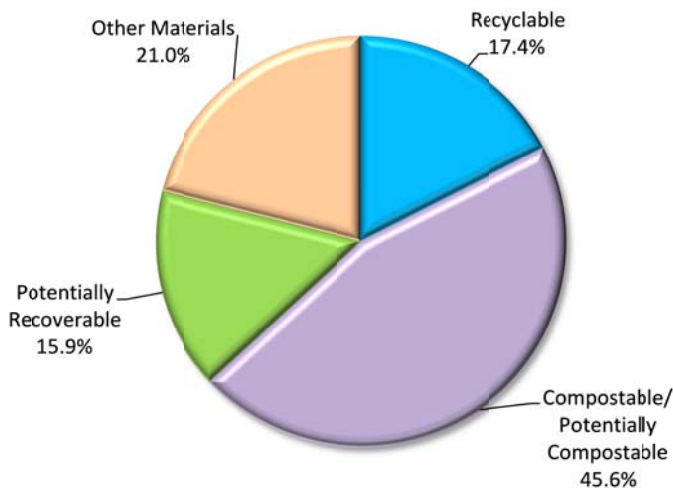
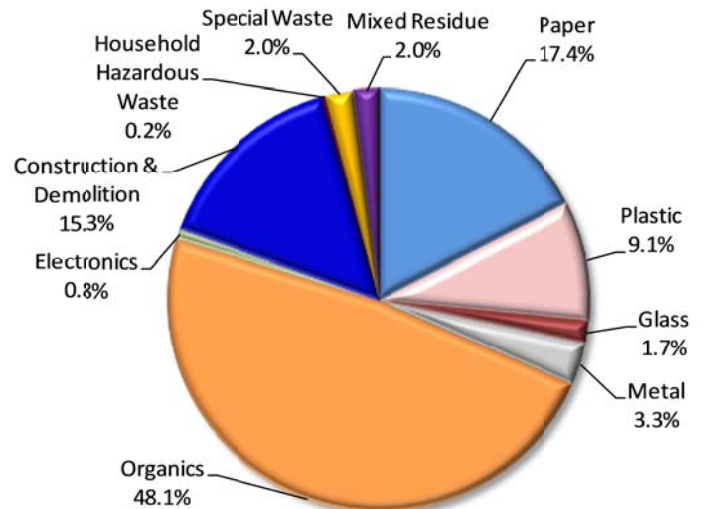


Figure 9. Composition by Material Class, Overall Residential, 2012



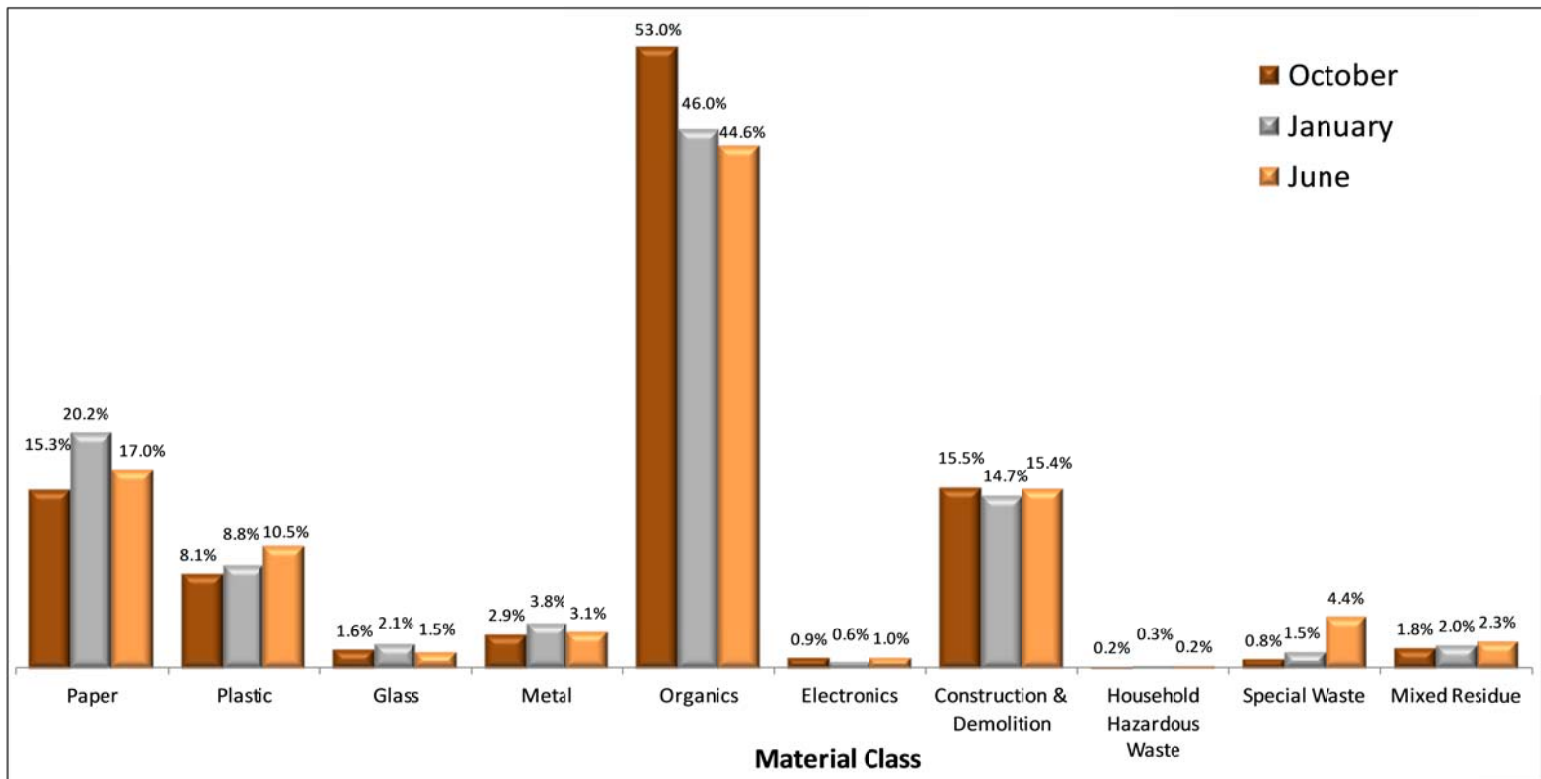
The ten most prevalent disposed materials can be found in Table 7. *Food* (18%), *leaves and grass* (9%), and *compostable/soiled paper* (6%) are the three most prevalent material types; together they represent more than 33% of the overall residential waste.

**Table 7. Ten Most Prevalent Disposed Material Types,
Overall Residential, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	17.9%	17.9%	107,203
Leaves and Grass	9.3%	27.2%	55,687
Compostable/Soiled Paper	6.0%	33.2%	36,072
Palm, Succulent, Coral Tree	5.7%	38.9%	34,108
Prunings and Trimmings	4.8%	43.7%	28,768
Textiles	4.2%	47.9%	25,318
Other Wood Waste	4.2%	52.1%	25,081
Uncoated Corrugated Cardboard	3.7%	55.8%	22,261
Mixed Waste Paper	3.4%	59.2%	20,441
Diapers	3.3%	62.5%	19,909
Subtotal	62.5%		374,849
All other material types (excluding residuals)	37.5%		224,804
Total (excluding residuals)	100.0%		599,653

As illustrated in Figure 10, **Organics** exhibited a downward trend over the three field seasons, declining from 53% in October to 45% in June.

Figure 10. Seasonal Composition by Material Class, Overall Residential, 2012



The detailed composition of the overall residential waste is shown in Table 8.

Table 8. Detailed Waste Composition, Overall Residential, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	17.4%		104,572	Electronics	0.8%		4,806
Uncoated Corrugated Cardboard	3.7%	0.5%	22,261	Brown Goods	0.5%	0.2%	2,714
Waxed Corrugated Cardboard	0.1%	0.1%	543	CRT	0.1%	0.1%	597
Paper Bags	0.4%	0.1%	2,170	Computer-Related Electronics	0.0%	0.0%	179
Newspaper	1.2%	0.2%	7,245	Other Consumer Electronics	0.2%	0.1%	1,061
White Ledger Paper	0.7%	0.1%	4,467	Video Display Devices (non-CRT devices)	0.0%	0.0%	256
Mixed Waste Paper	3.4%	0.2%	20,441				
Magazines	0.8%	0.2%	4,623	Construction & Demolition	15.3%		91,707
Phone Books and Directories	0.1%	0.1%	352	Concrete	1.5%	0.6%	9,106
Compostable/Soiled Paper	6.0%	0.4%	36,072	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.1%	0.0%	846	Asphalt Composition Shingles	0.1%	0.1%	769
Remainder/Composite Paper	0.9%	0.2%	5,553	Roofing Tar Paper/Felt	0.0%	0.0%	250
				Roofing Mastic	0.0%	0.0%	0
Plastic	9.1%		54,389	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	138	Other Asphalt Roofing Material	0.0%	0.0%	234
Non-CRV HDPE Containers	0.6%	0.1%	3,375	Clean Dimensional Lumber	0.6%	0.2%	3,744
CRV PETE Containers	0.3%	0.0%	1,519	Clean Engineered Wood	0.6%	0.2%	3,431
Non-CRV PETE Containers	0.3%	0.0%	2,007	Clean Pallets and Crates	0.3%	0.3%	1,995
Compostable Biodegradable Plastic Containers	0.0%	0.0%	43	Other Wood Waste	4.2%	0.7%	25,081
Miscellaneous Plastic Containers	0.7%	0.0%	4,130	Clean Gypsum Board	0.5%	0.3%	3,069
Plastic Grocery and Merchandise Bags	0.4%	0.0%	2,412	Painted/Demolition Gypsum Board	0.6%	0.3%	3,389
Clean Film Plastic	0.3%	0.1%	1,628	Carpet & Carpet Padding	3.1%	0.8%	18,819
Dirty Film Plastic	2.7%	0.2%	15,980	Rock, Soil and Fines	1.4%	0.5%	8,527
Durable Plastic Items	2.4%	0.4%	14,375	Contaminated Soil, Street Sweepings, Drain Cleaning	0.1%	0.2%	791
Expanded Polystyrene	0.5%	0.0%	2,972	Remainder/Composite C&D	2.1%	0.5%	12,502
Remainder/Composite Plastic	1.0%	0.2%	5,809				
				Household Hazardous Waste	0.2%		1,356
Glass	1.7%		10,477	Oil-Based Paint	0.0%	0.0%	185
CRV Clear Glass Bottles	0.2%	0.0%	1,212	Water-Based Paint	0.0%	0.0%	247
Non-CRV Clear Glass Bottles and Containers	0.4%	0.1%	2,587	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.2%	0.0%	1,408	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	263	Lead-Acid Batteries	0.0%	0.1%	270
CRV Other Colored Glass Bottles	0.1%	0.0%	425	Household Batteries	0.0%	0.0%	109
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.0%	1,399	Sharps	0.0%	0.0%	10
Flat Glass	0.2%	0.1%	1,016	Pharmaceuticals	0.0%	0.0%	93
Remainder/Composite Glass	0.4%	0.1%	2,167	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	70
				Remainder/Composite Household Hazardous	0.1%	0.1%	372
Metal	3.3%		19,686				
Tin/Steel Cans	0.6%	0.1%	3,585	Special Waste	2.0%		12,263
Major Appliances	0.0%	0.0%	92	Ash	0.0%	0.0%	33
Other Ferrous Metal	1.1%	0.3%	6,818	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.1%	1,046	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	233	Treated Medical Waste	0.0%	0.0%	29
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.7%	0.5%	9,924
Other Non-Ferrous Metal	0.4%	0.1%	2,437	Tire	0.3%	0.2%	1,785
Remainder/Composite Metal	0.9%	0.2%	5,474	Remainder/Composite Special Waste	0.1%	0.1%	493
Organics	48.1%		288,495	Mixed Residue	2.0%		11,901
Food	17.9%	1.1%	107,203	Mixed Residue	2.0%	0.4%	11,901
Palm, Succulent, Coral Tree	5.7%	0.8%	34,108				
Leaves and Grass	9.3%	1.1%	55,687	Total	100.0%		599,653
Prunings and Trimmings	4.8%	0.8%	28,768				
Branches and Stumps	0.7%	0.3%	4,455	Curbside Residential Recycling Processing Residuals			10,422
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.1%	0.1%	730				
Manures	0.0%	0.0%	237	Total Including Residuals			610,075
Diapers	3.3%	0.4%	19,909				
Textiles	4.2%	0.5%	25,318	Sample Count			451
Remainder/Composite Organics	2.0%	0.3%	12,079				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Overall Commercial Waste

The overall commercial composition is based on 366 hand sorted franchise-collected commercial samples and 623 visually characterized self-haul commercial samples for a total of 989 samples. Franchise-collected samples were refuse generated in San Diego and delivered in packer trucks, open-top drag-on containers, or compacted drag-on containers. The self-haul samples were either refuse or C&D materials generated both inside and outside the City limits. The substreams included in the overall commercial waste composition and their associated tonnages are shown in Table 9.

Table 9. Included Substreams and Tons, Overall Commercial Waste

Included Substreams	Tons
Franchise Collected Packer Trucks	225,076
Open-top Drag-on Containers	128,529
Compacted Drag-on Containers	106,249
Commercial Self-haul Flat Rate Vehicles	40,466
Commercial Self-haul Small Vehicles	33,462
Commercial Self-haul Large Vehicles	107,131
Total Disposal in Substream	640,913

Key Findings

Figure 11 illustrates the recoverability of the overall commercial waste, which is approximately 74% recoverable (37% is Compostable/Potentially Compostable, 17% is Recyclable, shown in blue, and 20% is Potentially Compostable). Nearly two thirds of the overall commercial waste is in the **Construction and Demolition** (33%) material class or the **Organics** (31%) material class, as shown in Figure 12.

Figure 11. Composition by Recoverability Group, Overall Commercial, 2012

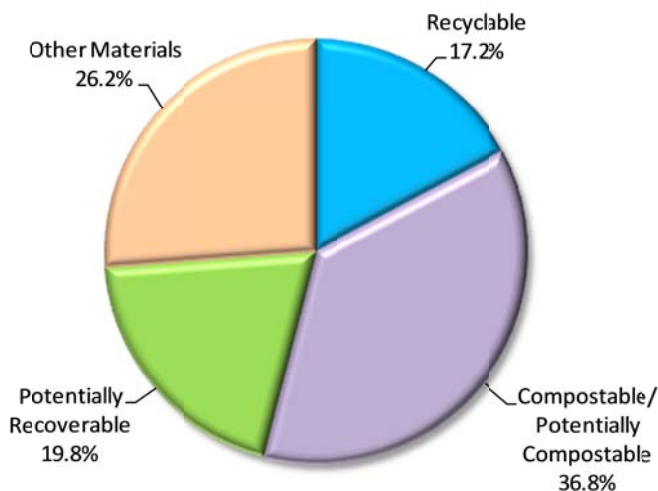
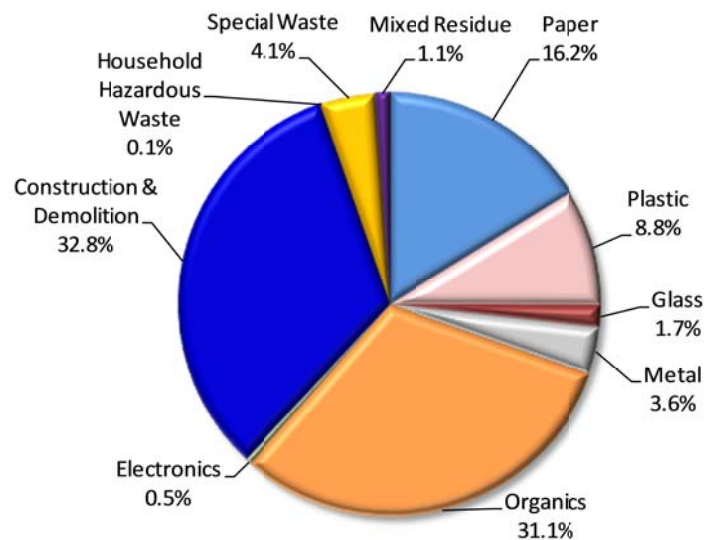


Figure 12. Composition by Material Class, Overall Commercial, 2012



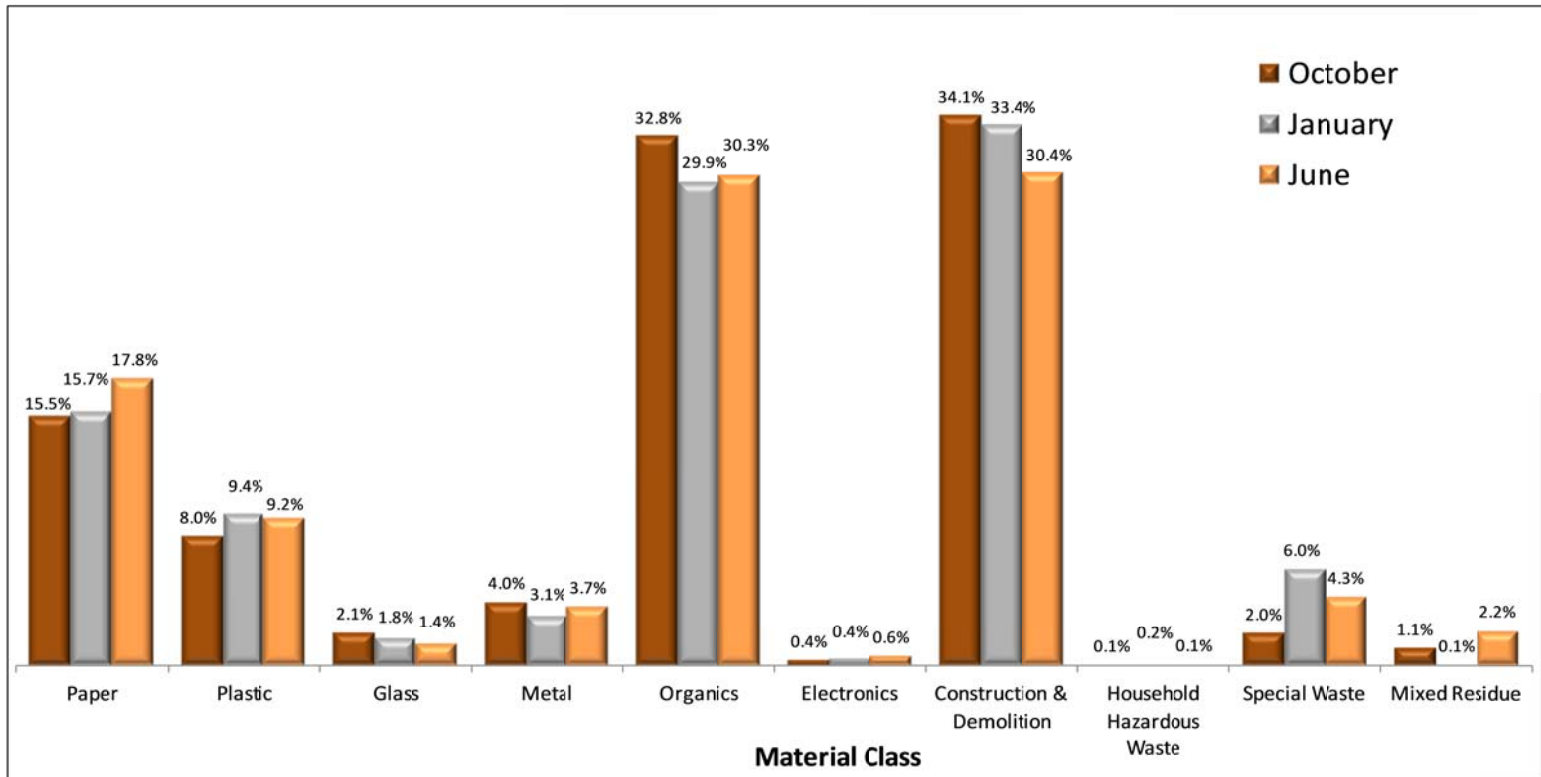
The ten most prevalent material types (see Table 10) combined account for more than half (55%) of the overall commercial waste. *Food* is the most prevalent material (13%) and the only material type greater than 6% of the waste.

**Table 10. Ten Most Prevalent Disposed Material Types,
Overall Commercial, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	12.5%	12.5%	79,829
Other Wood Waste	5.8%	18.3%	37,296
Remainder/Composite C&D	5.4%	23.7%	34,461
Uncoated Corrugated Cardboard	5.4%	29.0%	34,423
Carpet & Carpet Padding	5.2%	34.3%	33,588
Palm, Succulent, Coral Tree	5.1%	39.3%	32,408
Leaves and Grass	4.7%	44.0%	29,965
Compostable/Soiled Paper	4.4%	48.4%	28,404
Clean Pallets and Crates	3.5%	52.0%	22,680
Rock, Soil and Fines	3.1%	55.0%	19,552
Subtotal	55.0%		352,606
All other material types (excluding residuals)	45.0%		288,307
Total (excluding residuals)	100.0%		640,913

The prevalence of individual material classes within the overall commercial waste composition did not vary substantially by season (see Figure 13).

Figure 13. Seasonal Composition by Material Class, Overall Commercial, 2012



The detailed composition of the overall commercial waste is shown in Table 11.

Table 11. Detailed Waste Composition, Overall Commercial, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	16.2%		103,903	Electronics	0.5%		3,022
Uncoated Corrugated Cardboard	5.4%	0.6%	34,423	Brown Goods	0.2%	0.1%	1,503
Waxed Corrugated Cardboard	0.5%	0.3%	3,465	CRT	0.0%	0.0%	198
Paper Bags	0.2%	0.1%	1,351	Computer-Related Electronics	0.0%	0.0%	197
Newspaper	0.5%	0.1%	3,134	Other Consumer Electronics	0.1%	0.1%	574
White Ledger Paper	1.0%	0.2%	6,304	Video Display Devices (non-CRT devices)	0.1%	0.1%	550
Mixed Waste Paper	2.4%	0.3%	15,353				
Magazines	0.4%	0.1%	2,553	Construction & Demolition	32.8%		210,005
Phone Books and Directories	0.0%	0.0%	170	Concrete	2.1%	0.9%	13,497
Compostable/Soiled Paper	4.4%	0.4%	28,404	Asphalt Paving	0.4%	0.6%	2,735
Aseptic/Milk Containers	0.1%	0.0%	768	Asphalt Composition Shingles	0.4%	0.2%	2,586
Remainder/Composite Paper	1.2%	0.2%	7,976	Roofing Tar Paper/Felt	0.5%	0.4%	3,070
				Roofing Mastic	0.0%	0.0%	28
Plastic	8.8%		56,528	Built-Up Roofing	0.3%	0.4%	2,008
CRV HDPE Containers	0.0%	0.0%	118	Other Asphalt Roofing Material	0.1%	0.2%	869
Non-CRV HDPE Containers	0.3%	0.1%	1,891	Clean Dimensional Lumber	1.7%	0.4%	10,678
CRV PETE Containers	0.2%	0.0%	1,291	Clean Engineered Wood	1.2%	0.3%	7,831
Non-CRV PETE Containers	0.1%	0.0%	894	Clean Pallets and Crates	3.5%	0.8%	22,680
Compostable Biodegradable Plastic Containers	0.0%	0.0%	78	Other Wood Waste	5.8%	1.0%	37,296
Miscellaneous Plastic Containers	0.5%	0.1%	3,430	Clean Gypsum Board	0.6%	0.3%	3,975
Plastic Grocery and Merchandise Bags	0.2%	0.1%	996	Painted/Demolition Gypsum Board	1.6%	0.5%	10,114
Clean Film Plastic	0.9%	0.3%	5,858	Carpet & Carpet Padding	5.2%	1.1%	33,588
Dirty Film Plastic	2.5%	0.3%	16,095	Rock, Soil and Fines	3.1%	0.9%	19,552
Durable Plastic Items	2.1%	0.4%	13,705	Contaminated Soil, Street Sweepings, Drain Cleaning	0.8%	1.1%	5,036
Expanded Polystyrene	0.5%	0.1%	3,341	Remainder/Composite C&D	5.4%	0.9%	34,461
Remainder/Composite Plastic	1.4%	0.3%	8,832				
				Household Hazardous Waste	0.1%		745
Glass	1.7%		11,201	Oil-Based Paint	0.0%	0.0%	199
CRV Clear Glass Bottles	0.2%	0.0%	964	Water-Based Paint	0.0%	0.0%	250
Non-CRV Clear Glass Bottles and Containers	0.1%	0.0%	852	Vehicle and Equipment Fluids	0.0%	0.0%	9
CRV Brown Glass Bottles	0.2%	0.0%	982	Used Oil	0.0%	0.0%	37
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	275	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.0%	552	Household Batteries	0.0%	0.0%	54
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.0%	979	Sharps	0.0%	0.0%	2
Flat Glass	0.5%	0.2%	2,943	Pharmaceuticals	0.0%	0.0%	29
Remainder/Composite Glass	0.6%	0.3%	3,654	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	46
				Remainder/Composite Household Hazardous	0.0%	0.0%	118
Metal	3.6%		23,091				
Tin/Steel Cans	0.4%	0.1%	2,352	Special Waste	4.1%		26,056
Major Appliances	0.1%	0.1%	830	Ash	0.0%	0.0%	35
Other Ferrous Metal	1.2%	0.3%	7,901	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.0%	558	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	228	Treated Medical Waste	0.0%	0.0%	153
Used Oil Filters	0.0%	0.0%	185	Bulky Items	2.1%	0.5%	13,435
Other Non-Ferrous Metal	0.8%	0.2%	5,039	Tire	0.9%	0.6%	5,683
Remainder/Composite Metal	0.9%	0.2%	5,998	Remainder/Composite Special Waste	1.1%	0.4%	6,749
Organics	31.1%		199,146	Mixed Residue	1.1%		7,216
Food	12.5%	1.1%	79,829	Mixed Residue	1.1%	0.3%	7,216
Palm, Succulent, Coral Tree	5.1%	1.5%	32,408				
Leaves and Grass	4.7%	0.8%	29,965	Total	100.0%		640,913
Prunings and Trimmings	2.4%	0.5%	15,622				
Branches and Stumps	0.7%	0.3%	4,482	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.1%	0.1%	502	C&D Processing Residuals			14,993
Grass Sod	1.2%	1.0%	7,411				
Manures	0.1%	0.1%	382	Total Including Residuals			655,906
Diapers	0.6%	0.2%	4,131				
Textiles	2.6%	0.5%	16,753	Sample Count			989
Remainder/Composite Organics	1.2%	0.3%	7,661				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Overall Military Waste

The composition data in this section is the combination of samples from two substreams:

1. The 32 hand sorted franchise military samples. These samples were either refuse or C&D materials originating at one of two military bases in San Diego: MCAS or 32nd Street (NAVSTA).
2. The 32 visually characterized military self-haul samples. These samples were either refuse or C&D materials originating at any military base that regularly hauls waste to Miramar Landfill.

Table 12. Included Substreams and Tons, Overall Military Waste

Included Substreams	Tons
Franchise Collected Military	21,480
Military Self-haul Small Vehicles	36
Military Self-haul Large Vehicles	501
Military Self-haul Extra Large Vehicles	2,960
Total Disposal in Substream	24,977

The substreams included in the overall military waste stream and their associated tonnages are shown in Table 12.

Key Findings

Three quarters (75%) of the overall military waste is recoverable, primarily Compostable/Potentially Compostable materials (33%), Recyclable materials (21%), and Potentially Recoverable materials (21%). **Construction & Demolition** (40%) and **Paper** (19%) are the most common material classes in the waste. This information is summarized in Figure 14 and Figure 15.

Figure 14. Composition by Recoverability Group, Overall Military, 2012

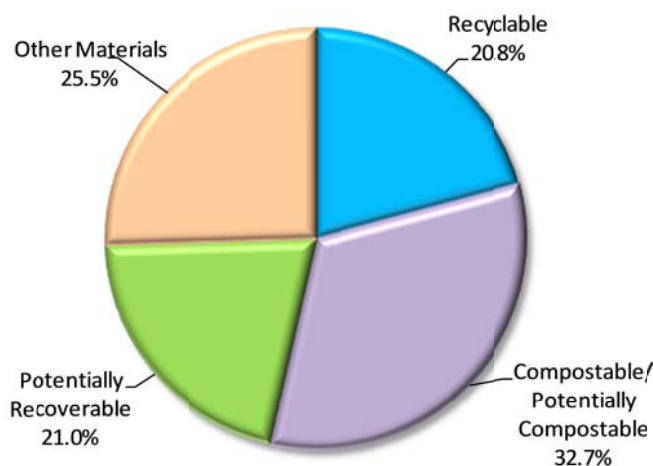
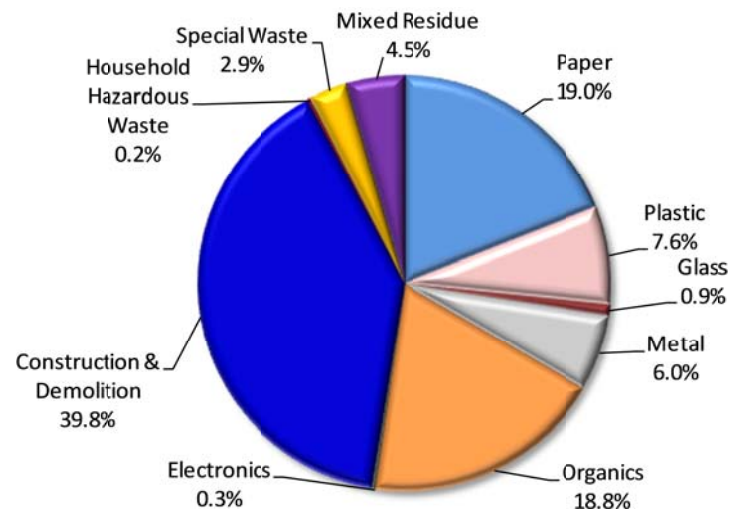


Figure 15. Composition by Material Class, Overall Military, 2012



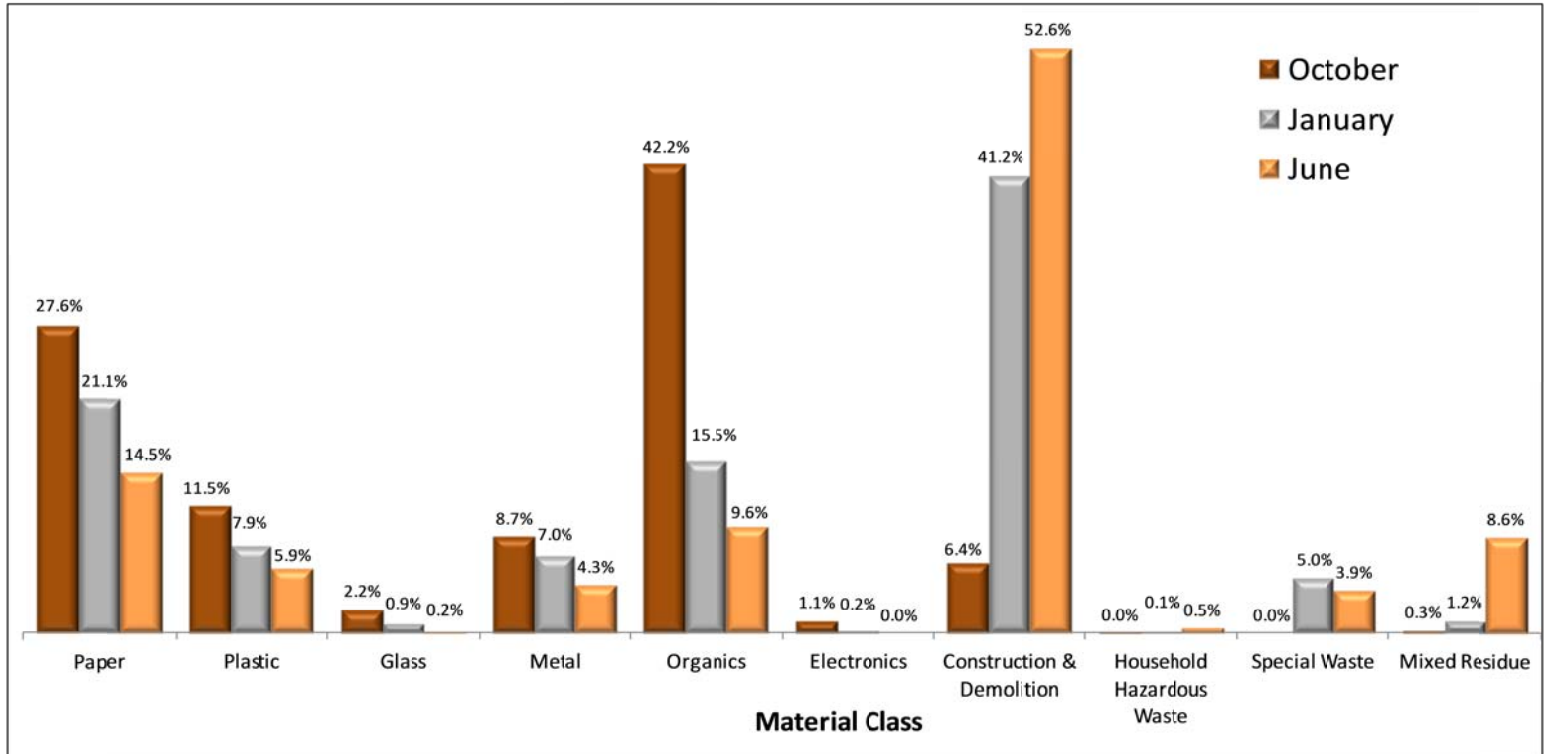
Clean pallets and crates (12%), *food* (11%), and *other wood waste* (9%) are the three most prevalent materials in the overall military waste. As shown in Table 13, together they represent approximately 32% of the waste.

**Table 13. Ten Most Prevalent Disposed Material Types,
Overall Military, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Clean Pallets and Crates	12.0%	12.0%	2,986
Food	10.9%	22.9%	2,728
Other Wood Waste	8.7%	31.6%	2,174
Clean Engineered Wood	7.9%	39.5%	1,979
Uncoated Corrugated Cardboard	6.4%	45.9%	1,601
Compostable/Soiled Paper	5.1%	51.0%	1,280
Mixed Residue	4.5%	55.5%	1,121
Rock, Soil and Fines	3.5%	59.0%	877
Textiles	3.4%	62.5%	858
Mixed Waste Paper	2.9%	65.4%	729
Subtotal	65.4%		16,333
All other material types	34.6%		8,644
Total	100.0%		24,977

As illustrated in Figure 16, the prevalence of the **Construction and Demolition** materials in the overall military waste increased each season. Most of the other material classes displayed a downward trend from October to June.

Figure 16. Seasonal Composition by Material Class, Overall Military, 2012



The detailed composition of the overall military waste is shown in Table 14.

Table 14. Detailed Waste Composition, Overall Military, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	19.0%		4,748	Electronics	0.3%		81
Uncoated Corrugated Cardboard	6.4%	3.0%	1,601	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	1	CRT	0.2%	0.4%	53
Paper Bags	0.3%	0.2%	80	Computer-Related Electronics	0.1%	0.1%	20
Newspaper	0.3%	0.2%	76	Other Consumer Electronics	0.0%	0.0%	8
White Ledger Paper	2.5%	1.5%	617	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	2.9%	0.8%	729				
Magazines	0.2%	0.1%	56	Construction & Demolition	39.8%		9,936
Phone Books and Directories	0.0%	0.0%	0	Concrete	0.3%	0.3%	65
Compostable/Soiled Paper	5.1%	2.5%	1,280	Asphalt Paving	2.9%	4.0%	725
Aseptic/Milk Containers	0.0%	0.0%	5	Asphalt Composition Shingles	0.0%	0.0%	4
Remainder/Composite Paper	1.2%	0.7%	303	Roofing Tar Paper/Felt	0.0%	0.0%	2
				Roofing Mastic	0.0%	0.0%	0
Plastic	7.6%		1,889	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	9	Other Asphalt Roofing Material	0.0%	0.0%	5
Non-CRV HDPE Containers	0.3%	0.1%	66	Clean Dimensional Lumber	1.2%	1.3%	303
CRV PETE Containers	0.5%	0.2%	114	Clean Engineered Wood	7.9%	9.7%	1,979
Non-CRV PETE Containers	0.2%	0.1%	40	Clean Pallets and Crates	12.0%	6.0%	2,986
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	8.7%	3.8%	2,174
Miscellaneous Plastic Containers	0.5%	0.2%	114	Clean Gypsum Board	0.1%	0.1%	23
Plastic Grocery and Merchandise Bags	0.2%	0.1%	51	Painted/Demolition Gypsum Board	0.3%	0.3%	64
Clean Film Plastic	0.4%	0.3%	107	Carpet & Carpet Padding	0.6%	0.6%	154
Dirty Film Plastic	2.1%	0.9%	519	Rock, Soil and Fines	3.5%	3.6%	877
Durable Plastic Items	1.7%	0.9%	412	Contaminated Soil, Street Sweepings, Drain Cleaning	1.1%	0.9%	275
Expanded Polystyrene	0.5%	0.3%	117	Remainder/Composite C&D	1.2%	1.3%	301
Remainder/Composite Plastic	1.4%	0.9%	340				
				Household Hazardous Waste	0.2%		56
Glass	0.9%		224	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.2%	0.1%	46	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.1%	0.0%	15	Vehicle and Equipment Fluids	0.0%	0.0%	1
CRV Brown Glass Bottles	0.1%	0.1%	30	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	3	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	9	Household Batteries	0.0%	0.0%	3
Non-CRV other Colored Glass Bottles and Containers	0.1%	0.2%	29	Sharps	0.0%	0.0%	0
Flat Glass	0.0%	0.0%	6	Pharmaceuticals	0.2%	0.3%	51
Remainder/Composite Glass	0.3%	0.3%	87	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	6.0%		1,498				
Tin/Steel Cans	0.2%	0.1%	39	Special Waste	2.9%		736
Major Appliances	0.4%	0.7%	105	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.6%	1.6%	408	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.3%	0.2%	85	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	8	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.8%	2.6%	694
Other Non-Ferrous Metal	0.5%	0.5%	126	Tire	0.0%	0.0%	0
Remainder/Composite Metal	2.9%	2.7%	728	Remainder/Composite Special Waste	0.2%	0.3%	42
Organics	18.8%		4,688	Mixed Residue			1,121
Food	10.9%	4.9%	2,728	Mixed Residue	4.5%	4.3%	1,121
Palm, Succulent, Coral Tree	1.9%	1.7%	480				
Leaves and Grass	0.9%	0.9%	219	Total	100.0%		24,977
Prunings and Trimmings	0.5%	0.4%	126	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.2%	0.3%	46	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			24,977
Manures	0.0%	0.0%	0				
Diapers	0.1%	0.2%	32	Sample Count			64
Textiles	3.4%	1.9%	858				
Remainder/Composite Organics	0.8%	0.4%	199				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Overall Self-haul Waste

The project team visually characterized 832 samples from the overall self-haul waste. The nine included substreams and their associated tonnages are shown in Table 15. These samples were from both within and outside the San Diego city limits and included refuse and C&D loads.

Table 15. Included Substreams and Tons, Overall Self-haul

Included Substreams	Tons
Residential Self-haul Flat Rate Vehicles	34,230
Residential Self-haul Small Vehicles	6,153
Residential Self-haul Large Vehicles	2,008
Commercial Self-haul Flat Rate Vehicles	40,466
Commercial Self-haul Small Vehicles	33,462
Commercial Self-haul Large Vehicles	107,131
Military Self-haul Small Vehicles	36
Military Self-haul Large Vehicles	501
Military Self-haul Extra Large Vehicles	2,960
Total Disposal in Substream	226,947

Key Findings

The overall self-haul waste composition by recoverability group and by material class is shown in **Figure 17** and **Figure 18**, respectively. The recoverable fractions, Compostable/Potentially Compostable materials (in purple), Recyclable materials (in blue), and Potentially Recoverable materials (in green) compose more than two thirds (70%) of the overall self-haul waste. The self-haul waste is comprised primarily of **Construction & Demolition** (59%) materials. **Organics** (27%) is the only other material class that makes up more than 3% of the waste stream.

Figure 17. Composition by Recoverability Group, Overall Self-haul, 2012

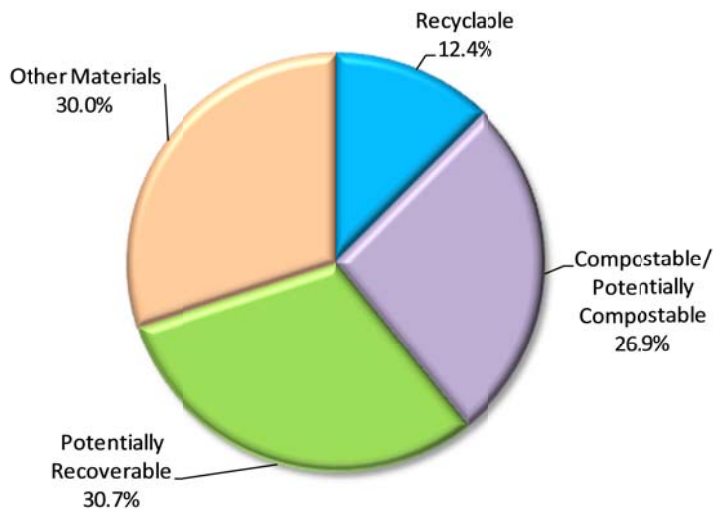
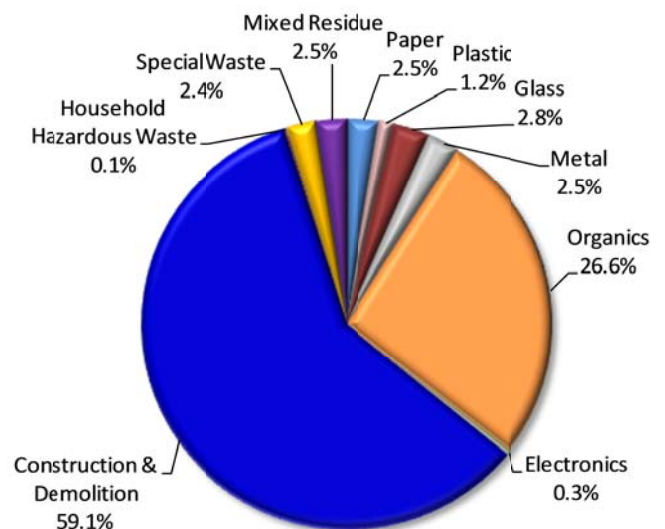


Figure 18. Composition by Material Class, Overall Self-haul, 2012



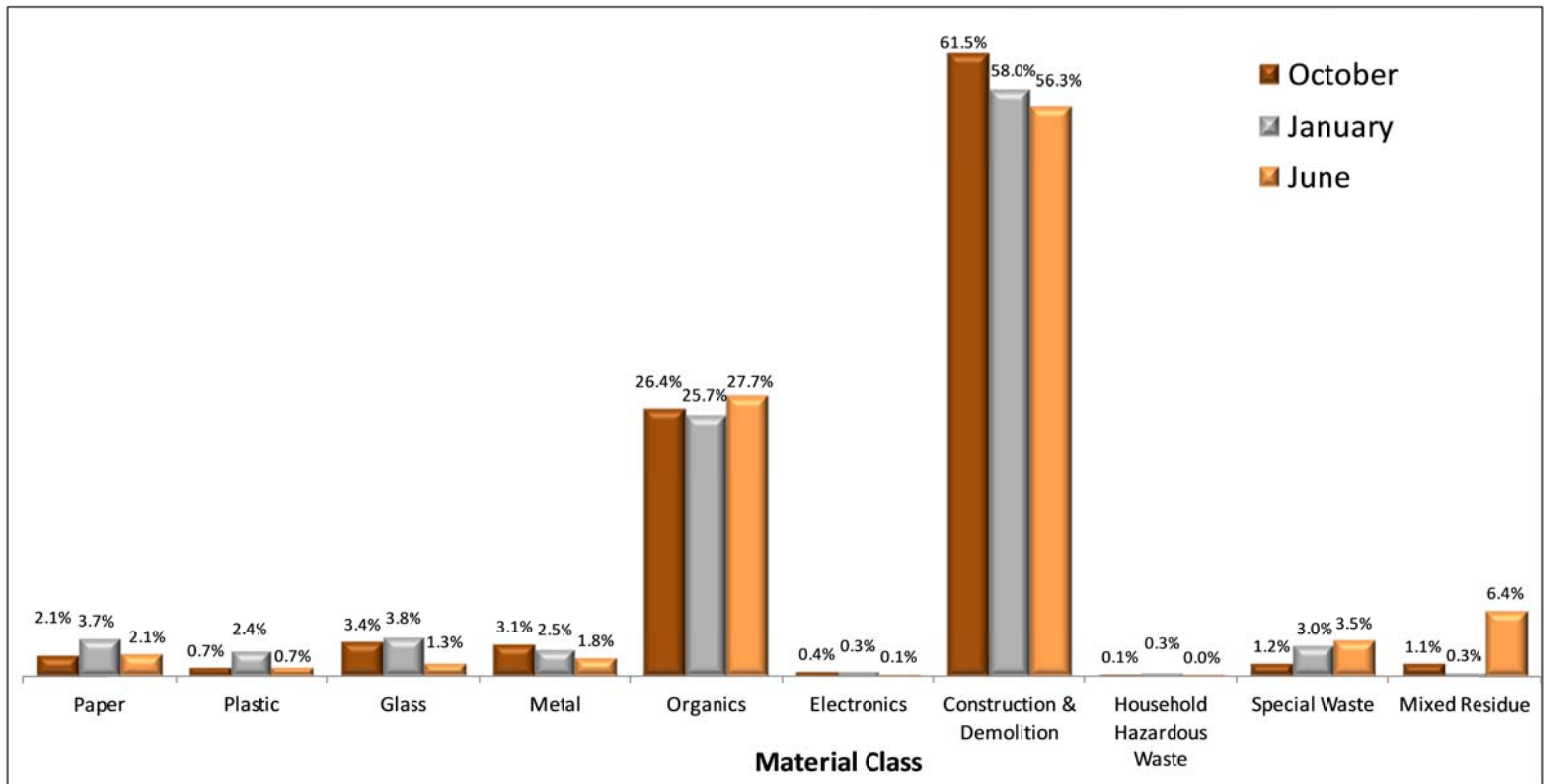
The ten most prevalent material types account for more than two thirds (69%) of the overall self-haul waste. *Carpet and carpet padding* (12%); *palm, succulent and coral tree* (11%); and *other wood waste* (10%) are the three most prevalent materials; together they represent approximately 33% of the waste. See Table 16 for a summary of this data.

**Table 16. Ten Most Prevalent Disposed Material Types,
Overall Self-haul, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	12.4%	12.4%	28,164
Palm, Succulent, Coral Tree	11.3%	23.7%	25,706
Other Wood Waste	9.5%	33.2%	21,537
Rock, Soil and Fines	7.9%	41.1%	17,880
Remainder/Composite C&D	7.2%	48.3%	16,383
Concrete	6.2%	54.6%	14,140
Leaves and Grass	5.0%	59.6%	11,355
Grass Sod	3.4%	62.9%	7,686
Textiles	3.1%	66.0%	6,970
Prunings and Trimmings	2.5%	68.5%	5,636
Subtotal	68.5%		155,456
All other material types	31.5%		71,491
Total	100.0%		226,947

There is little seasonal variability in the composition of the overall self-haul waste. From October to June the prevalence of most material classes remained comparatively stable. The overall self-haul waste seasonal composition data is summarized in Figure 19.

Figure 19. Seasonal Composition by Material Class, Overall Self-haul, 2012



The detailed composition of the overall self-haul waste is shown in Table 17.

Table 17. Detailed Waste Composition, Overall Self-haul, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.5%		5,649	Electronics	0.3%		716
Uncoated Corrugated Cardboard	1.2%	0.6%	2,761	Brown Goods	0.2%	0.1%	433
Waxed Corrugated Cardboard	0.0%	0.0%	2	CRT	0.0%	0.0%	22
Paper Bags	0.0%	0.0%	24	Computer-Related Electronics	0.0%	0.0%	75
Newspaper	0.1%	0.1%	164	Other Consumer Electronics	0.1%	0.1%	176
White Ledger Paper	0.1%	0.0%	129	Video Display Devices (non-CRT devices)	0.0%	0.0%	10
Mixed Waste Paper	0.8%	0.3%	1,732				
Magazines	0.1%	0.0%	136	Construction & Demolition	59.1%		134,144
Phone Books and Directories	0.0%	0.0%	2	Concrete	6.2%	2.6%	14,140
Compostable/Soiled Paper	0.0%	0.0%	73	Asphalt Paving	1.5%	1.8%	3,460
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.1%	0.6%	2,415
Remainder/Composite Paper	0.3%	0.2%	626	Roofing Tar Paper/Felt	1.1%	1.1%	2,404
				Roofing Mastic	0.0%	0.0%	28
Plastic	1.2%		2,690	Built-Up Roofing	0.9%	1.2%	2,008
CRV HDPE Containers	0.0%	0.0%	3	Other Asphalt Roofing Material	0.3%	0.4%	777
Non-CRV HDPE Containers	0.0%	0.0%	48	Clean Dimensional Lumber	2.0%	0.6%	4,549
CRV PETE Containers	0.0%	0.0%	48	Clean Engineered Wood	1.8%	0.5%	4,100
Non-CRV PETE Containers	0.0%	0.0%	8	Clean Pallets and Crates	1.7%	0.7%	3,890
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	9.5%	2.0%	21,537
Miscellaneous Plastic Containers	0.0%	0.0%	74	Clean Gypsum Board	1.0%	0.4%	2,318
Plastic Grocery and Merchandise Bags	0.0%	0.0%	19	Painted/Demolition Gypsum Board	2.2%	0.7%	5,075
Clean Film Plastic	0.4%	0.4%	909	Carpet & Carpet Padding	12.4%	2.6%	28,164
Dirty Film Plastic	0.1%	0.0%	183	Rock, Soil and Fines	7.9%	2.5%	17,880
Durable Plastic Items	0.4%	0.1%	821	Contaminated Soil, Street Sweepings, Drain Cleaning	2.2%	3.1%	5,016
Expanded Polystyrene	0.1%	0.1%	283	Remainder/Composite C&D	7.2%	1.8%	16,383
Remainder/Composite Plastic	0.1%	0.0%	293				
				Household Hazardous Waste	0.1%		282
Glass	2.8%		6,444	Oil-Based Paint	0.0%	0.0%	26
CRV Clear Glass Bottles	0.0%	0.0%	39	Water-Based Paint	0.0%	0.1%	80
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	63	Vehicle and Equipment Fluids	0.0%	0.0%	5
CRV Brown Glass Bottles	0.0%	0.0%	16	Used Oil	0.0%	0.0%	37
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	8
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	5	Sharps	0.0%	0.0%	0
Flat Glass	1.4%	0.5%	3,162	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.4%	0.8%	3,158	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	89
				Remainder/Composite Household Hazardous	0.0%	0.0%	37
Metal	2.5%		5,629				
Tin/Steel Cans	0.1%	0.0%	167	Special Waste	2.4%		5,362
Major Appliances	0.1%	0.1%	120	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.1%	0.3%	2,532	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	34	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	12	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.3%	0.5%	5,158
Other Non-Ferrous Metal	1.0%	0.4%	2,240	Tire	0.1%	0.1%	149
Remainder/Composite Metal	0.2%	0.1%	525	Remainder/Composite Special Waste	0.0%	0.0%	55
Organics	26.6%		60,428	Mixed Residue	2.5%		5,602
Food	0.0%	0.0%	52	Mixed Residue	2.5%	0.9%	5,602
Palm, Succulent, Coral Tree	11.3%	4.0%	25,706				
Leaves and Grass	5.0%	1.2%	11,355	Total	100.0%		226,947
Prunings and Trimmings	2.5%	0.6%	5,636	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.8%	0.4%	1,796	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	39				
Grass Sod	3.4%	2.9%	7,686	Total Including Residuals			226,947
Manures	0.1%	0.1%	175				
Diapers	0.0%	0.0%	8	Sample Count			832
Textiles	3.1%	0.9%	6,970				
Remainder/Composite Organics	0.4%	0.2%	1,006				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Residential Substreams

City-collected Single Family Substream

The project team hand sorted 181 samples from the city-collected single family substream. The composition data is the weighted average of 91 single family without green waste service samples and 90 single family with green waste service samples. The single family substreams and their associated tonnages are shown in Table 18. More detailed data for the city-collected single family substream is available beginning on page 123.

**Table 18. Included Substreams and Tons,
City-collected Single Family**

Included Substreams	Tons
City Collected Single Family with Green Waste Service	107,310
City Collected Single Family w/o Green Waste Service	199,291
Total Disposal in Substream	306,601

Key Findings

As shown in **Figure 20**, approximately 81% of the city-collected single family substream is recoverable. Compostable/Potentially Compostable, shown in purple, makes up 53%. Approximately 15% is Recyclable (shown in blue), and 13% Potentially Recoverable, shown in green. The waste composition data by material class are presented in **Figure 21**. **Organics** (57%) and **Paper** (16%) are the two most prevalent material classes.

When comparing the waste composition data from single family accounts with and without green waste service the proportion of green waste is very similar for the two service types (see Figure 77). This suggests that the green waste service is underutilized by those with green waste service.

Figure 20. Composition by Recoverability Group, City-collected Single Family

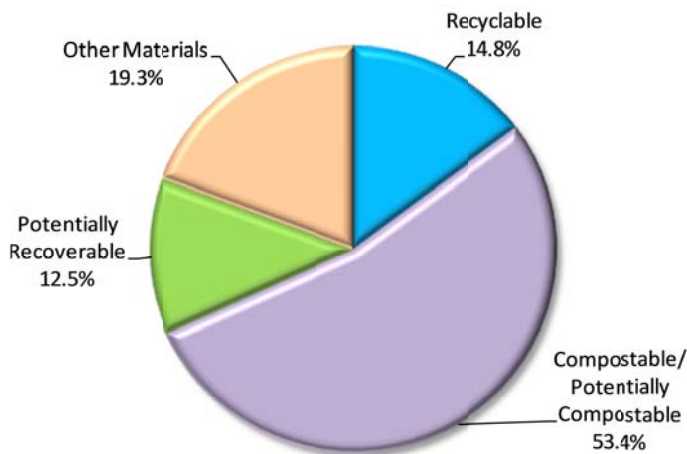
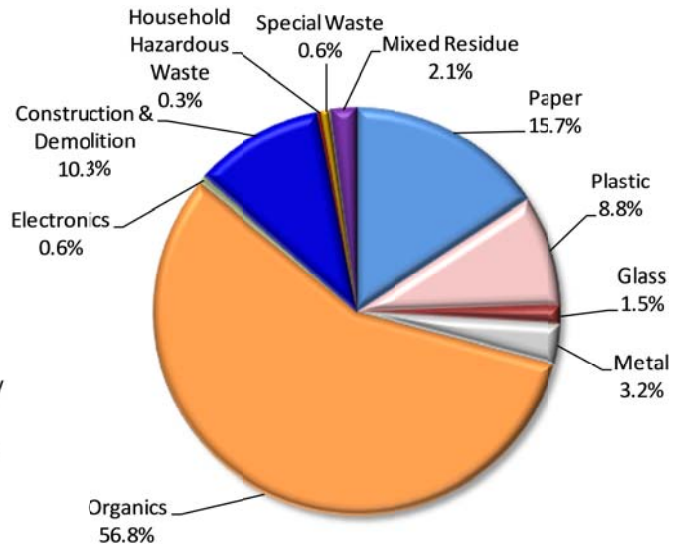


Figure 21. Composition by Material Class, City-collected Single Family



The ten most prevalent disposed materials in the substream are shown in Table 19. As shown, *food* (19%), *leaves and grass* (12%), and *palm, succulent, and coral tree* (8%) are the three most prevalent materials; together they represent approximately 39% of city-collected single family disposal.

Table 19. Ten Most Prevalent Disposed Material Types, City-collected Single Family, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	18.5%	18.5%	56,744
Leaves and Grass	12.0%	30.5%	36,725
Palm, Succulent, Coral Tree	8.4%	38.9%	25,905
Prunings and Trimmings	6.7%	45.6%	20,439
Compostable/Soiled Paper	6.1%	51.7%	18,804
Textiles	4.2%	55.9%	12,923
Mixed Waste Paper	3.5%	59.4%	10,656
Diapers	3.3%	62.7%	10,149
Other Wood Waste	3.2%	65.9%	9,725
Dirty Film Plastic	2.7%	68.6%	8,267
Subtotal	68.6%		210,337
All other material types	31.4%		96,264
Total	100.0%		306,601

The detailed composition of the city-collected single family substream is shown in Table 20.

Table 20. Detailed Waste Composition, City-collected Single Family, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	15.7%		48,045	Electronics	0.6%		1,837
Uncoated Corrugated Cardboard	2.1%	0.3%	6,363	Brown Goods	0.4%	0.2%	1,178
Waxed Corrugated Cardboard	0.0%	0.0%	26	CRT	0.0%	0.0%	0
Paper Bags	0.3%	0.0%	887	Computer-Related Electronics	0.0%	0.0%	113
Newspaper	1.3%	0.2%	3,846	Other Consumer Electronics	0.1%	0.0%	301
White Ledger Paper	0.6%	0.1%	1,838	Video Display Devices (non-CRT devices)	0.1%	0.1%	245
Mixed Waste Paper	3.5%	0.3%	10,656				
Magazines	1.0%	0.4%	2,946	Construction & Demolition	10.3%		31,678
Phone Books and Directories	0.0%	0.0%	96	Concrete	0.5%	0.4%	1,556
Compostable/Soiled Paper	6.1%	0.5%	18,804	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.1%	0.0%	437	Asphalt Composition Shingles	0.2%	0.2%	741
Remainder/Composite Paper	0.7%	0.2%	2,148	Roofing Tar Paper/Felt	0.0%	0.0%	135
				Roofing Mastic	0.0%	0.0%	0
Plastic	8.8%		26,945	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	47	Other Asphalt Roofing Material	0.0%	0.1%	120
Non-CRV HDPE Containers	0.5%	0.1%	1,410	Clean Dimensional Lumber	0.3%	0.1%	1,012
CRV PETE Containers	0.2%	0.0%	749	Clean Engineered Wood	0.5%	0.3%	1,440
Non-CRV PETE Containers	0.4%	0.0%	1,104	Clean Pallets and Crates	0.1%	0.1%	246
Compostable Biodegradable Plastic Containers	0.0%	0.0%	19	Other Wood Waste	3.2%	0.7%	9,725
Miscellaneous Plastic Containers	0.7%	0.1%	2,218	Clean Gypsum Board	0.4%	0.4%	1,244
Plastic Grocery and Merchandise Bags	0.5%	0.0%	1,469	Painted/Demolition Gypsum Board	0.5%	0.4%	1,496
Clean Film Plastic	0.2%	0.0%	497	Carpet & Carpet Padding	1.6%	0.6%	4,842
Dirty Film Plastic	2.7%	0.2%	8,267	Rock, Soil and Fines	1.3%	0.8%	4,137
Durable Plastic Items	2.3%	0.5%	7,085	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.1%	150
Expanded Polystyrene	0.5%	0.0%	1,569	Remainder/Composite C&D	1.6%	0.5%	4,835
Remainder/Composite Plastic	0.8%	0.1%	2,510				
				Household Hazardous Waste	0.3%		862
Glass	1.5%		4,524	Oil-Based Paint	0.1%	0.1%	185
CRV Clear Glass Bottles	0.2%	0.1%	544	Water-Based Paint	0.1%	0.1%	223
Non-CRV Clear Glass Bottles and Containers	0.4%	0.1%	1,214	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.2%	0.1%	670	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.1%	0.0%	155	Lead-Acid Batteries	0.1%	0.1%	270
CRV Other Colored Glass Bottles	0.1%	0.0%	214	Household Batteries	0.0%	0.0%	74
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.1%	734	Sharps	0.0%	0.0%	9
Flat Glass	0.0%	0.0%	33	Pharmaceuticals	0.0%	0.0%	57
Remainder/Composite Glass	0.3%	0.1%	960	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	6
				Remainder/Composite Household Hazardous	0.0%	0.0%	39
Metal	3.2%		9,903				
Tin/Steel Cans	0.7%	0.1%	2,081	Special Waste	0.6%		1,982
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	33
Other Ferrous Metal	1.1%	0.4%	3,523	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.1%	652	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	87	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	0.5%	0.4%	1,609
Other Non-Ferrous Metal	0.3%	0.1%	989	Tire	0.0%	0.0%	54
Remainder/Composite Metal	0.8%	0.2%	2,569	Remainder/Composite Special Waste	0.1%	0.1%	286
Organics	56.8%		174,256	Mixed Residue	2.1%		6,569
Food	18.5%	1.2%	56,744	Mixed Residue	2.1%	0.5%	6,569
Palm, Succulent, Coral Tree	8.4%	1.3%	25,905				
Leaves and Grass	12.0%	1.5%	36,725	Total	100.0%		306,601
Prunings and Trimmings	6.7%	1.2%	20,439				
Branches and Stumps	1.0%	0.5%	3,214	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.1%	0.1%	452				
Manures	0.0%	0.0%	133	Total Including Residuals			306,601
Diapers	3.3%	0.4%	10,149				
Textiles	4.2%	0.6%	12,923	Sample Count			181
Remainder/Composite Organics	2.5%	0.4%	7,572				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Franchise-collected Multifamily Substream

The field crew hand sorted 93 samples from the City's franchise-collected multifamily substream. The tonnage associated with this substream is shown in Table 21.

Table 21. Included Substream and Tons, Franchise-collected Multifamily

Included Substreams	Tons
Franchise Collected Multifamily	250,661
Total Disposal in Substream	250,661

Key Findings

The key recoverability and material class findings for the multifamily substream are shown in Figure 22 and Figure 23, respectively. Approximately 79% of the multifamily substream is recoverable (42% is Compostable/Potentially Compostable, 21% is Recyclable, and 16% is Potentially Recoverable). **Organics** (43%) and **Paper** (22%) are the two most prevalent material classes.

Figure 22. Composition by Recoverability Group, Franchise-collected Multifamily

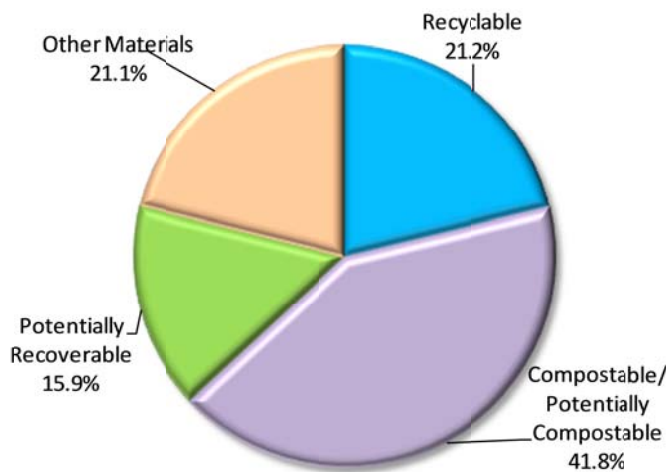
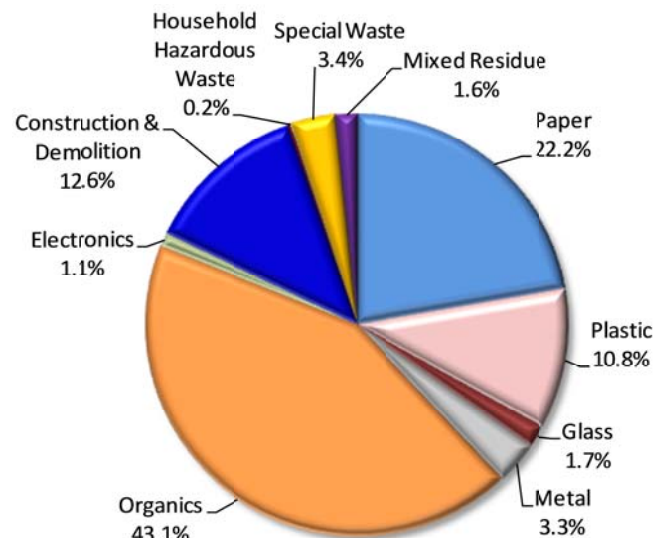


Figure 23. Composition by Material Class, Franchise-collected Multifamily



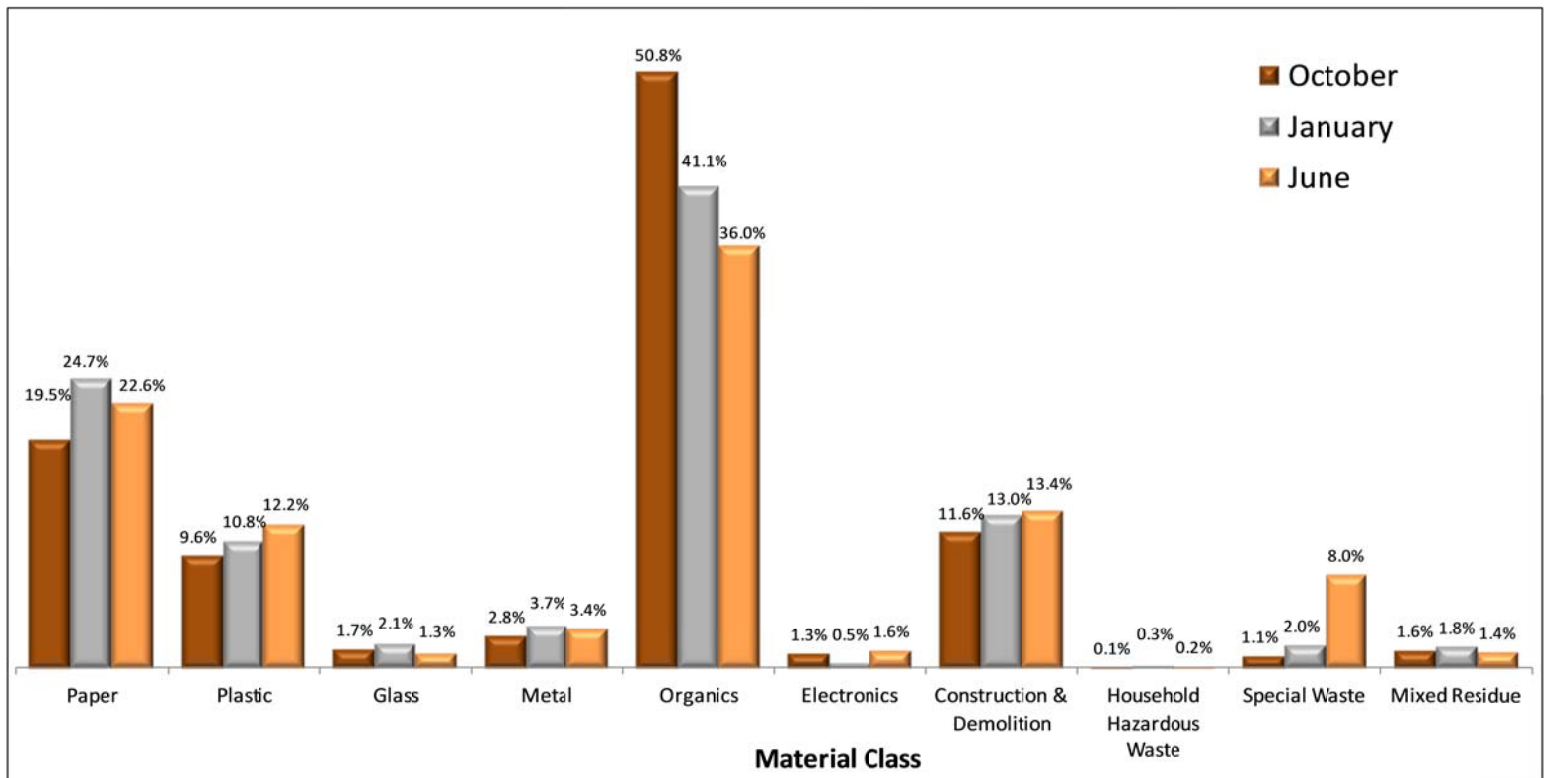
The ten most prevalent disposed materials can be found in Table 22. *Food* (20%), *leaves and grass* (7%), and *compostable/soiled paper* (7%) are the three most prevalent material types; together they represent approximately 34% of franchise-collected multifamily substream.

**Table 22. Ten Most Prevalent Disposed Material Types,
Franchise-collected Multifamily, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	20.1%	20.1%	50,450
Leaves and Grass	7.0%	27.1%	17,539
Compostable/Soiled Paper	6.9%	34.0%	17,266
Uncoated Corrugated Cardboard	6.2%	40.2%	15,520
Textiles	4.1%	44.3%	10,319
Diapers	3.9%	48.2%	9,753
Mixed Waste Paper	3.8%	52.0%	9,553
Other Wood Waste	3.6%	55.7%	9,095
Prunings and Trimmings	3.1%	58.7%	7,712
Dirty Film Plastic	3.1%	61.8%	7,704
Subtotal	61.8%		154,910
All other material types	38.2%		95,751
Total	100.0%		250,661

As illustrated in Figure 24, the prevalence of the **Organics** material class within the franchise-collected multifamily substream declined from October (51%) to June (36%).

Figure 24. Seasonal Composition by Material Class, Franchise-collected Multifamily, 2012



The detailed composition of the multifamily substream is shown in Table 23.

Table 23. Detailed Waste Composition, Franchise-collected Multifamily, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	22.2%		55,761	Electronics	1.1%		2,728
Uncoated Corrugated Cardboard	6.2%	1.1%	15,520	Brown Goods	0.5%	0.5%	1,376
Waxed Corrugated Cardboard	0.2%	0.1%	517	CRT	0.2%	0.3%	597
Paper Bags	0.5%	0.2%	1,270	Computer-Related Electronics	0.0%	0.0%	32
Newspaper	1.3%	0.3%	3,344	Other Consumer Electronics	0.3%	0.2%	724
White Ledger Paper	1.0%	0.3%	2,594	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	3.8%	0.4%	9,553				
Magazines	0.7%	0.2%	1,661	Construction & Demolition	12.6%		31,641
Phone Books and Directories	0.1%	0.1%	254	Concrete	1.4%	1.0%	3,611
Compostable/Soiled Paper	6.9%	0.8%	17,266	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.0%	409	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	1.3%	0.4%	3,373	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	10.8%		27,062	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	90	Other Asphalt Roofing Material	0.0%	0.1%	107
Non-CRV HDPE Containers	0.8%	0.2%	1,963	Clean Dimensional Lumber	0.6%	0.4%	1,592
CRV PETE Containers	0.3%	0.0%	766	Clean Engineered Wood	0.4%	0.3%	989
Non-CRV PETE Containers	0.4%	0.1%	900	Clean Pallets and Crates	0.6%	0.6%	1,584
Compostable Biodegradable Plastic Containers	0.0%	0.0%	23	Other Wood Waste	3.6%	1.2%	9,095
Miscellaneous Plastic Containers	0.8%	0.1%	1,901	Clean Gypsum Board	0.3%	0.3%	738
Plastic Grocery and Merchandise Bags	0.4%	0.1%	941	Painted/Demolition Gypsum Board	0.4%	0.4%	1,048
Clean Film Plastic	0.4%	0.2%	1,093	Carpet & Carpet Padding	2.5%	1.4%	6,299
Dirty Film Plastic	3.1%	0.4%	7,704	Rock, Soil and Fines	0.5%	0.2%	1,134
Durable Plastic Items	2.8%	0.7%	7,091	Contaminated Soil, Street Sweepings, Drain Cleaning	0.3%	0.4%	641
Expanded Polystyrene	0.6%	0.1%	1,383	Remainder/Composite C&D	1.9%	0.9%	4,802
Remainder/Composite Plastic	1.3%	0.5%	3,206				
				Household Hazardous Waste	0.2%		428
Glass	1.7%		4,252	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.3%	0.1%	658	Water-Based Paint	0.0%	0.0%	24
Non-CRV Clear Glass Bottles and Containers	0.5%	0.1%	1,373	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.3%	0.1%	734	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	109	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.0%	211	Household Batteries	0.0%	0.0%	35
Non-CRV other Colored Glass Bottles and Containers	0.3%	0.1%	665	Sharps	0.0%	0.0%	2
Flat Glass	0.0%	0.0%	38	Pharmaceuticals	0.0%	0.0%	37
Remainder/Composite Glass	0.2%	0.1%	466	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	3
				Remainder/Composite Household Hazardous	0.1%	0.1%	328
Metal	3.3%		8,211				
Tin/Steel Cans	0.6%	0.1%	1,493	Special Waste	3.4%		8,598
Major Appliances	0.0%	0.0%	67	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.0%	0.3%	2,427	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.0%	386	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.1%	0.1%	145	Treated Medical Waste	0.0%	0.0%	29
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.7%	1.1%	6,656
Other Non-Ferrous Metal	0.4%	0.2%	1,021	Tire	0.7%	0.5%	1,706
Remainder/Composite Metal	1.1%	0.4%	2,673	Remainder/Composite Special Waste	0.1%	0.1%	207
Organics	43.1%		107,924	Mixed Residue	1.6%		4,055
Food	20.1%	2.2%	50,450	Mixed Residue	1.6%	0.5%	4,055
Palm, Succulent, Coral Tree	2.7%	0.9%	6,891				
Leaves and Grass	7.0%	2.0%	17,539	Total	100.0%		250,661
Prunings and Trimmings	3.1%	1.3%	7,712	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.4%	0.4%	1,121	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	3	Total Including Residuals			250,661
Manures	0.0%	0.1%	104				
Diapers	3.9%	0.9%	9,753	Sample Count			93
Textiles	4.1%	0.8%	10,319				
Remainder/Composite Organics	1.6%	0.4%	4,033				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Residential Substream

The self-haul residential substream composition is based on 177 visually characterized samples. These samples were from both within and outside the San Diego city limits and included refuse and C&D loads. The landfill fee booth staff identified these loads as being from residential generators. The self-haul residential substream tonnage is shown in Table 24.

Table 24. Included Substreams and Tons, Self-haul Residential

Included Substreams	Tons
Residential Self-haul Flat Rate Vehicles	34,230
Residential Self-haul Small Vehicles	6,153
Residential Self-haul Large Vehicles	2,008
Total Disposal in Substream	42,391

Key Findings

Figure 25 illustrates the recoverability of the self-haul residential substream which is primarily Potentially Recoverable materials (41%, shown in green). The recoverable fraction (Compostable/Potentially Compostable, Recyclable, and Potentially Recoverable materials) accounts for 67% of the self-haul residential substream. Slightly more than two thirds of the material in the self-haul residential substream is in the **Construction & Demolition** (67%) material class, as shown in Figure 26.

Figure 25. Composition by Recoverability Group, Self-haul Residential

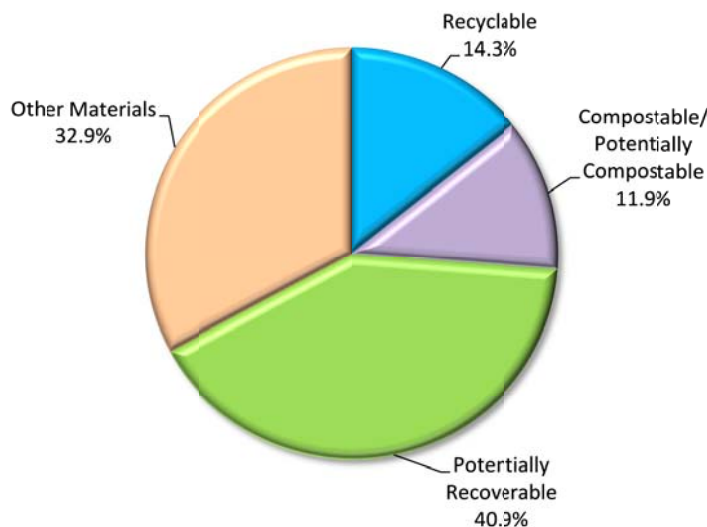
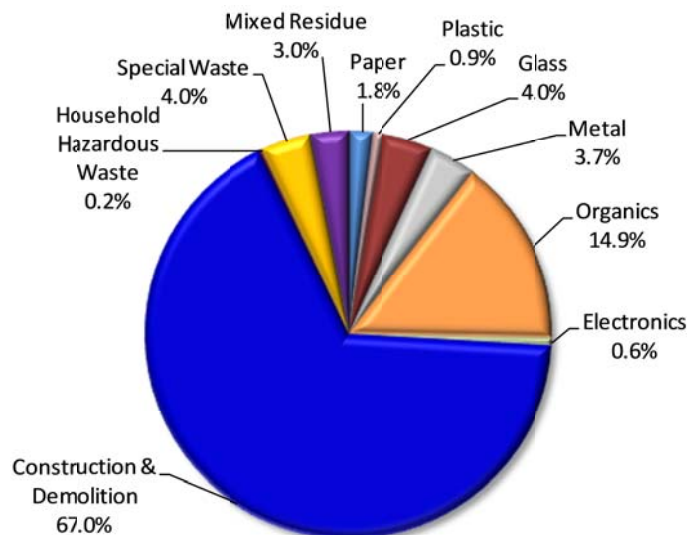


Figure 26. Composition by Material Class, Self-haul Residential



The ten most prevalent material types (see Table 25) combined account for nearly three quarters (75%) of the self-haul residential substream. *Carpet and carpet padding* (18%) and *other wood waste* (15%) are the most two prevalent materials and the only material types greater than 10% of the substream.

**Table 25. Ten Most Prevalent Disposed Material Types,
Self-haul Residential, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	18.1%	18.1%	7,678
Other Wood Waste	14.8%	32.9%	6,260
Concrete	9.3%	42.2%	3,939
Rock, Soil and Fines	7.7%	49.9%	3,256
Remainder/Composite C&D	6.8%	56.6%	2,865
Textiles	4.9%	61.5%	2,076
Bulky Items	3.9%	65.4%	1,658
Leaves and Grass	3.4%	68.8%	1,423
Palm, Succulent, Coral Tree	3.1%	71.9%	1,312
Mixed Residue	3.0%	74.9%	1,277
Subtotal	74.9%		31,745
All other material types	25.1%		10,646
Total	100.0%		42,391

The detailed composition of the self-haul residential substream is shown in Table 26.

Table 26. Detailed Waste Composition, Self-haul Residential, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.8%		766	Electronics	0.6%		241
Uncoated Corrugated Cardboard	0.9%	0.4%	379	Brown Goods	0.4%	0.3%	160
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	13	Computer-Related Electronics	0.1%	0.1%	34
Newspaper	0.1%	0.1%	55	Other Consumer Electronics	0.1%	0.1%	36
White Ledger Paper	0.1%	0.1%	35	Video Display Devices (non-CRT devices)	0.0%	0.0%	10
Mixed Waste Paper	0.5%	0.2%	232				
Magazines	0.0%	0.0%	16	Construction & Demolition	67.0%		28,389
Phone Books and Directories	0.0%	0.0%	2	Concrete	9.3%	6.3%	3,939
Compostable/Soiled Paper	0.0%	0.0%	2	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.1%	0.1%	28
Remainder/Composite Paper	0.1%	0.1%	32	Roofing Tar Paper/Felt	0.3%	0.3%	115
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.9%		382	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	1	Other Asphalt Roofing Material	0.0%	0.0%	8
Non-CRV HDPE Containers	0.0%	0.0%	2	Clean Dimensional Lumber	2.7%	1.7%	1,141
CRV PETE Containers	0.0%	0.0%	4	Clean Engineered Wood	2.4%	1.3%	1,003
Non-CRV PETE Containers	0.0%	0.0%	2	Clean Pallets and Crates	0.4%	0.3%	165
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	14.8%	6.0%	6,260
Miscellaneous Plastic Containers	0.0%	0.0%	10	Clean Gypsum Board	2.6%	2.0%	1,086
Plastic Grocery and Merchandise Bags	0.0%	0.0%	2	Painted/Demolition Gypsum Board	2.0%	1.2%	845
Clean Film Plastic	0.1%	0.0%	38	Carpet & Carpet Padding	18.1%	6.3%	7,678
Dirty Film Plastic	0.0%	0.0%	9	Rock, Soil and Fines	7.7%	3.8%	3,256
Durable Plastic Items	0.5%	0.2%	200	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	20	Remainder/Composite C&D	6.8%	2.6%	2,865
Remainder/Composite Plastic	0.2%	0.1%	93				
				Household Hazardous Waste	0.2%		67
Glass	4.0%		1,701	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	9	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	5	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	2.2%	1.5%	945	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.7%	1.0%	741	CFL, Fluorescent Tube and Other Mercury-Containing	0.1%	0.1%	62
				Remainder/Composite Household Hazardous	0.0%	0.0%	5
Metal	3.7%		1,572				
Tin/Steel Cans	0.0%	0.0%	11	Special Waste	4.0%		1,683
Major Appliances	0.1%	0.1%	26	Ash	0.0%	0.0%	0
Other Ferrous Metal	2.0%	0.7%	867	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	9	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	3.9%	1.2%	1,658
Other Non-Ferrous Metal	1.0%	0.4%	427	Tire	0.1%	0.1%	25
Remainder/Composite Metal	0.5%	0.5%	232	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	14.9%		6,315	Mixed Residue	3.0%		1,277
Food	0.0%	0.0%	9	Mixed Residue	3.0%	1.6%	1,277
Palm, Succulent, Coral Tree	3.1%	1.5%	1,312				
Leaves and Grass	3.4%	1.8%	1,423	Total	100.0%		42,391
Prunings and Trimmings	1.5%	1.2%	617	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.3%	0.2%	120	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.6%	0.8%	275	Total Including Residuals			42,391
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	8	Sample Count			177
Textiles	4.9%	1.9%	2,076				
Remainder/Composite Organics	1.1%	0.6%	473				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Commercial Substreams

Franchise-collected Commercial Substream

The field crew hand sorted 366 samples from the City's franchise-collected commercial substream. The composition data is the weighted average of samples from three substreams, all originating within the City: 126 front load packer truck samples, 120 open-top drag-on samples, and 120 compacted drag-on samples. The substreams within the franchise-collected commercial substream and their associated tonnages are shown in Table 27.

Table 27. Included Substreams and Tons, Franchise-collected Commercial

Included Substreams	Tons
Franchise Collected Packer Trucks	225,076
Open-top Drag-on Containers	128,529
Compacted Drag-on Containers	106,249
Total Disposal in Substream	459,854

Key Findings

Three quarters (75%) of the franchise-collected commercial substream is recoverable, primarily Compostable/Potentially Compostable materials (39%). Recyclable materials (19%) and Potentially Recoverable materials (17%) account for the remaining recoverable fraction. **Organics** (32%) and **Construction & Demolition** (23%) are the most commonly found material classes. This information is summarized in Figure 27 and Figure 28.

Franchise collected commercial compacted drag-on containers have a higher proportion of Recyclable material than franchise-collected commercial open-top drag-on containers (see **Figure 93** and **Figure 96**).

Figure 27. Composition by Recoverability Group, Franchise-collected Commercial

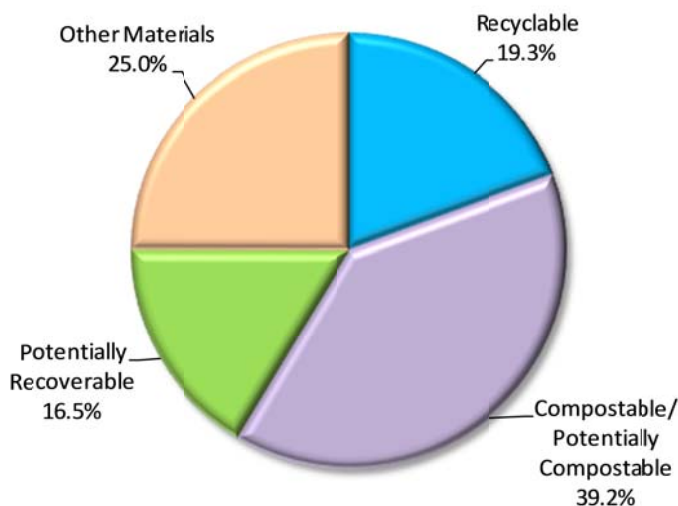
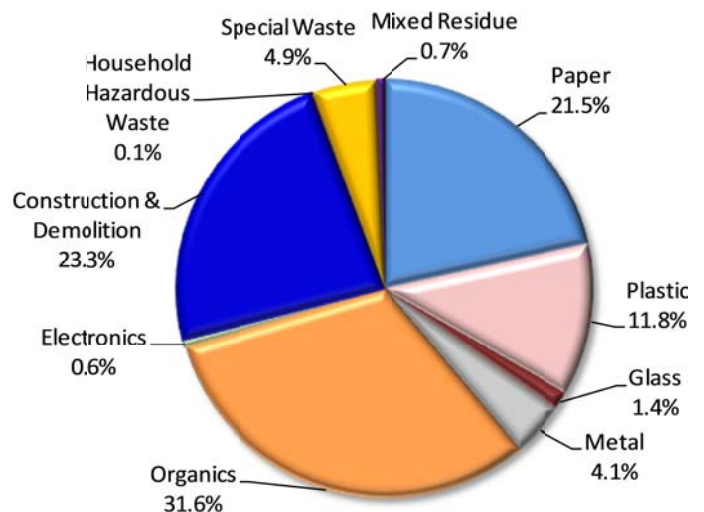


Figure 28. Composition by Material Class, Franchise-collected Commercial



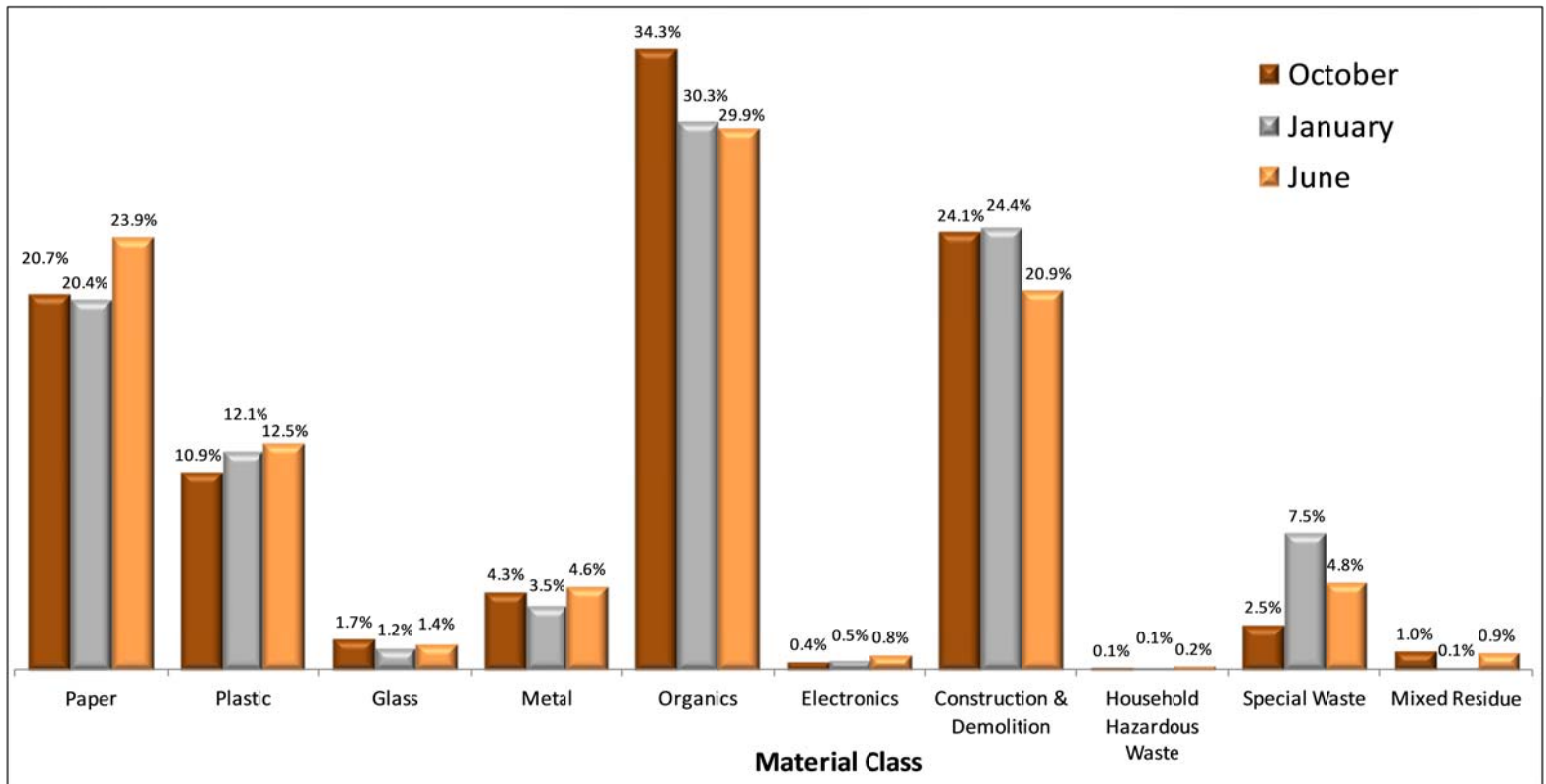
Food (17%), *uncoated corrugated cardboard* (7%), and *compostable/soiled paper* (6%) are the three most prevalent material types in the franchise-collected commercial substream. As shown in Table 28, these three material types together represent approximately 31% of the waste.

**Table 28. Ten Most Prevalent Disposed Material Types,
Franchise-collected Commercial, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	17.4%	17.4%	79,787
Uncoated Corrugated Cardboard	7.0%	24.3%	32,060
Compostable/Soiled Paper	6.2%	30.5%	28,340
Other Wood Waste	4.9%	35.4%	22,552
Remainder/Composite C&D	4.6%	40.0%	21,001
Leaves and Grass	4.4%	44.3%	20,034
Clean Pallets and Crates	4.2%	48.5%	19,134
Dirty Film Plastic	3.5%	51.9%	15,922
Mixed Waste Paper	3.0%	55.0%	13,862
Carpet & Carpet Padding	2.9%	57.8%	13,194
Subtotal	57.8%		265,886
All other material types	42.2%		193,968
Total	100.0%		459,854

Figure 29 summarizes the seasonal composition by material class for the franchise-collected commercial substream. The prevalence of the **Organics** material class decreased each season from a high of 34% in October to a low of 30% in June.

Figure 29. Seasonal Composition by Material Class, Franchise-collected Commercial, 2012



The detailed composition of the franchise-collected commercial substream is shown in Table 29.

Table 29. Detailed Waste Composition, Franchise-collected Commercial, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	21.5%		99,064	Electronics	0.6%		2,547
Uncoated Corrugated Cardboard	7.0%	0.8%	32,060	Brown Goods	0.3%	0.1%	1,230
Waxed Corrugated Cardboard	0.8%	0.4%	3,464	CRT	0.0%	0.0%	175
Paper Bags	0.3%	0.1%	1,341	Computer-Related Electronics	0.0%	0.0%	155
Newspaper	0.7%	0.1%	3,026	Other Consumer Electronics	0.1%	0.1%	436
White Ledger Paper	1.4%	0.3%	6,214	Video Display Devices (non-CRT devices)	0.1%	0.2%	550
Mixed Waste Paper	3.0%	0.3%	13,862				
Magazines	0.5%	0.1%	2,433	Construction & Demolition	23.3%		107,053
Phone Books and Directories	0.0%	0.0%	170	Concrete	0.7%	0.5%	3,326
Compostable/Soiled Paper	6.2%	0.5%	28,340	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.0%	768	Asphalt Composition Shingles	0.0%	0.1%	204
Remainder/Composite Paper	1.6%	0.3%	7,387	Roofing Tar Paper/Felt	0.2%	0.3%	784
				Roofing Mastic	0.0%	0.0%	0
Plastic	11.8%		54,235	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	115	Other Asphalt Roofing Material	0.0%	0.0%	100
Non-CRV HDPE Containers	0.4%	0.1%	1,846	Clean Dimensional Lumber	1.6%	0.5%	7,283
CRV PETE Containers	0.3%	0.0%	1,247	Clean Engineered Wood	1.0%	0.3%	4,805
Non-CRV PETE Containers	0.2%	0.0%	888	Clean Pallets and Crates	4.2%	1.1%	19,134
Compostable Biodegradable Plastic Containers	0.0%	0.0%	78	Other Wood Waste	4.9%	1.1%	22,552
Miscellaneous Plastic Containers	0.7%	0.1%	3,367	Clean Gypsum Board	0.6%	0.4%	2,766
Plastic Grocery and Merchandise Bags	0.2%	0.1%	979	Painted/Demolition Gypsum Board	1.3%	0.6%	5,928
Clean Film Plastic	1.1%	0.3%	4,989	Carpet & Carpet Padding	2.9%	1.1%	13,194
Dirty Film Plastic	3.5%	0.4%	15,922	Rock, Soil and Fines	1.2%	0.5%	5,709
Durable Plastic Items	2.8%	0.6%	13,091	Contaminated Soil, Street Sweepings, Drain Cleaning	0.1%	0.1%	267
Expanded Polystyrene	0.7%	0.1%	3,078	Remainder/Composite C&D	4.6%	0.9%	21,001
Remainder/Composite Plastic	1.9%	0.4%	8,635				
				Household Hazardous Waste	0.1%		530
Glass	1.4%		6,482	Oil-Based Paint	0.0%	0.0%	173
CRV Clear Glass Bottles	0.2%	0.0%	935	Water-Based Paint	0.0%	0.1%	171
Non-CRV Clear Glass Bottles and Containers	0.2%	0.0%	789	Vehicle and Equipment Fluids	0.0%	0.0%	4
CRV Brown Glass Bottles	0.2%	0.1%	971	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.1%	0.0%	274	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.1%	552	Household Batteries	0.0%	0.0%	46
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.1%	974	Sharps	0.0%	0.0%	2
Flat Glass	0.2%	0.2%	731	Pharmaceuticals	0.0%	0.0%	29
Remainder/Composite Glass	0.3%	0.2%	1,257	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	19
				Remainder/Composite Household Hazardous	0.0%	0.0%	86
Metal	4.1%		19,076				
Tin/Steel Cans	0.5%	0.1%	2,196	Special Waste	4.9%		22,532
Major Appliances	0.2%	0.2%	736	Ash	0.0%	0.0%	35
Other Ferrous Metal	1.4%	0.4%	6,249	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.0%	533	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	216	Treated Medical Waste	0.0%	0.1%	153
Used Oil Filters	0.0%	0.1%	185	Bulky Items	2.2%	0.7%	10,091
Other Non-Ferrous Metal	0.7%	0.3%	3,242	Tire	1.2%	0.8%	5,559
Remainder/Composite Metal	1.2%	0.3%	5,719	Remainder/Composite Special Waste	1.5%	0.5%	6,694
Organics	31.6%		145,196	Mixed Residue	0.7%		3,139
Food	17.4%	1.6%	79,787	Mixed Residue	0.7%	0.3%	3,139
Palm, Succulent, Coral Tree	1.8%	0.7%	8,154				
Leaves and Grass	4.4%	1.0%	20,034	Total	100.0%		459,854
Prunings and Trimmings	2.3%	0.7%	10,603				
Branches and Stumps	0.6%	0.4%	2,812	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.1%	0.1%	464	C&D Processing Residuals			0
Grass Sod	0.0%	0.0%	0				
Manures	0.0%	0.1%	207	Total Including Residuals			459,854
Diapers	0.9%	0.3%	4,131				
Textiles	2.6%	0.5%	11,877	Sample Count			366
Remainder/Composite Organics	1.6%	0.4%	7,129				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-Haul Commercial Substream

The project team visually characterized 623 samples from the self-haul commercial substream. These samples were from both within and outside the San Diego city limits, and included refuse and C&D loads. City department loads (for example, from the parks department or the water department) were also included in this substream. The substreams included and their associated tonnages are shown in Table 30.

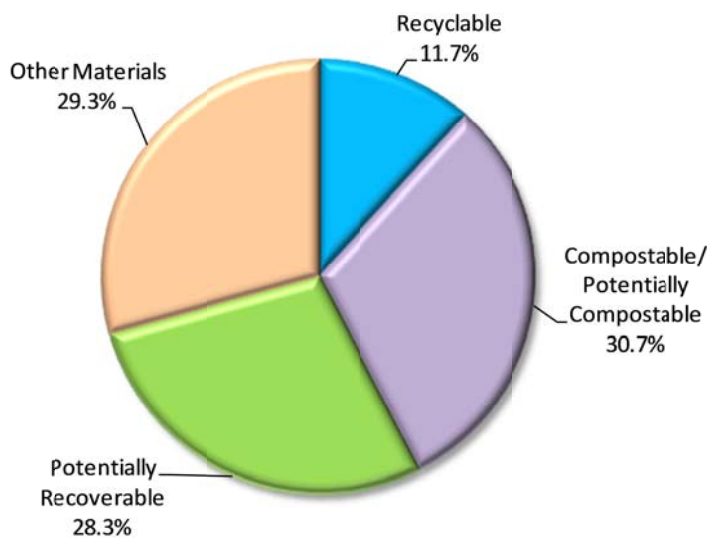
**Table 30. Included Substreams and Tons,
Self-haul Commercial**

Included Substreams	Tons
Commercial Self-haul Flat Rate Vehicles	40,466
Commercial Self-haul Small Vehicles	33,462
Commercial Self-haul Large Vehicles	107,131
Total Disposal in Substream	181,059

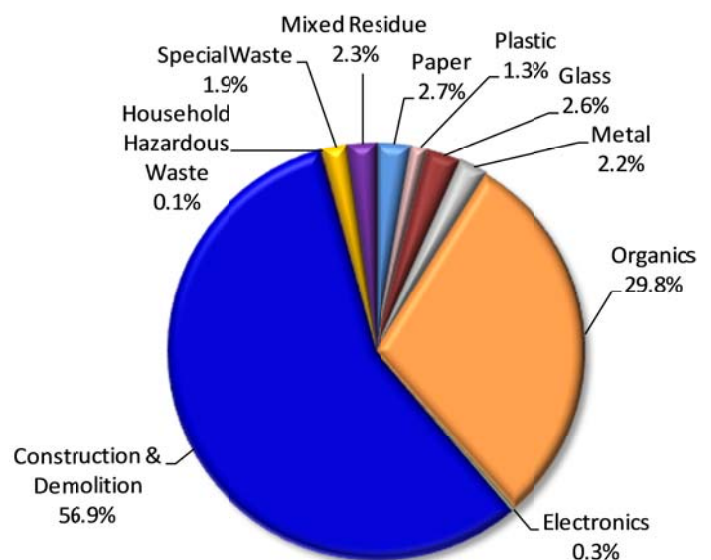
Key Findings

The self-haul waste commercial substream composition by recoverability group and by material class is shown in **Figure 30** and **Figure 31**, respectively. The three recoverable portions of the substream, Compostable/Potentially Compostable materials (in purple), Recyclable materials (in blue), and Potentially Recoverable (in green) together compose 70% of the self-haul commercial substream. The self-haul commercial substream is comprised primarily of **Construction & Demolition** (57%) materials. **Organics** (30%) is the only other material class making up more than 3% of the self-haul commercial substream.

**Figure 30. Composition by Recoverability Group,
Self-haul Commercial**



**Figure 31. Composition by Material Class,
Self-haul Commercial**



The ten most prevalent material types account for more than two thirds (69%) of the self-haul commercial substream. *Palm, succulent, and coral tree* (13%); *carpet and carpet padding* (11%); and *other wood waste* (8%) are the three most prevalent materials; together they represent approximately 33% of the material in the substream. See Table 31 for a summary of this data.

**Table 31. Ten Most Prevalent Disposed Material Types,
Self-haul Commercial, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Palm, Succulent, Coral Tree	13.4%	13.4%	24,254
Carpet & Carpet Padding	11.3%	24.7%	20,394
Other Wood Waste	8.1%	32.8%	14,744
Rock, Soil and Fines	7.6%	40.4%	13,842
Remainder/Composite C&D	7.4%	47.9%	13,460
Concrete	5.6%	53.5%	10,170
Leaves and Grass	5.5%	59.0%	9,931
Grass Sod	4.1%	63.1%	7,411
Prunings and Trimmings	2.8%	65.8%	5,019
Textiles	2.7%	68.5%	4,876
Subtotal	68.5%		124,102
All other material types	31.5%		56,957
Total	100.0%		181,059

The detailed composition of the self-haul commercial substream is shown in Table 32.

Table 32. Detailed Waste Composition, Self-haul Commercial, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.7%		4,838	Electronics	0.3%		475
Uncoated Corrugated Cardboard	1.3%	0.7%	2,363	Brown Goods	0.2%	0.1%	273
Waxed Corrugated Cardboard	0.0%	0.0%	2	CRT	0.0%	0.0%	22
Paper Bags	0.0%	0.0%	10	Computer-Related Electronics	0.0%	0.0%	41
Newspaper	0.1%	0.1%	108	Other Consumer Electronics	0.1%	0.1%	139
White Ledger Paper	0.0%	0.0%	90	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.8%	0.4%	1,492				
Magazines	0.1%	0.1%	120	Construction & Demolition	56.9%		102,952
Phone Books and Directories	0.0%	0.0%	0	Concrete	5.6%	2.9%	10,170
Compostable/Soiled Paper	0.0%	0.0%	64	Asphalt Paving	1.5%	2.2%	2,735
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.3%	0.8%	2,382
Remainder/Composite Paper	0.3%	0.2%	589	Roofing Tar Paper/Felt	1.3%	1.4%	2,287
				Roofing Mastic	0.0%	0.0%	28
Plastic	1.3%		2,293	Built-Up Roofing	1.1%	1.4%	2,008
CRV HDPE Containers	0.0%	0.0%	3	Other Asphalt Roofing Material	0.4%	0.5%	769
Non-CRV HDPE Containers	0.0%	0.0%	45	Clean Dimensional Lumber	1.9%	0.6%	3,395
CRV PETE Containers	0.0%	0.0%	44	Clean Engineered Wood	1.7%	0.6%	3,026
Non-CRV PETE Containers	0.0%	0.0%	5	Clean Pallets and Crates	2.0%	0.9%	3,545
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	8.1%	2.0%	14,744
Miscellaneous Plastic Containers	0.0%	0.0%	64	Clean Gypsum Board	0.7%	0.3%	1,209
Plastic Grocery and Merchandise Bags	0.0%	0.0%	18	Painted/Demolition Gypsum Board	2.3%	0.9%	4,187
Clean Film Plastic	0.5%	0.5%	869	Carpet & Carpet Padding	11.3%	2.9%	20,394
Dirty Film Plastic	0.1%	0.0%	173	Rock, Soil and Fines	7.6%	2.9%	13,842
Durable Plastic Items	0.3%	0.1%	614	Contaminated Soil, Street Sweepings, Drain Cleaning	2.6%	3.9%	4,769
Expanded Polystyrene	0.1%	0.1%	263	Remainder/Composite C&D	7.4%	2.2%	13,460
Remainder/Composite Plastic	0.1%	0.0%	196				
				Household Hazardous Waste	0.1%		215
Glass	2.6%		4,719	Oil-Based Paint	0.0%	0.0%	26
CRV Clear Glass Bottles	0.0%	0.0%	29	Water-Based Paint	0.0%	0.1%	80
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	63	Vehicle and Equipment Fluids	0.0%	0.0%	5
CRV Brown Glass Bottles	0.0%	0.0%	12	Used Oil	0.0%	0.0%	37
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	8
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	5	Sharps	0.0%	0.0%	0
Flat Glass	1.2%	0.6%	2,212	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.3%	0.9%	2,397	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	27
				Remainder/Composite Household Hazardous	0.0%	0.0%	32
Metal	2.2%		4,015				
Tin/Steel Cans	0.1%	0.1%	157	Special Waste	1.9%		3,524
Major Appliances	0.1%	0.1%	94	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.9%	0.3%	1,653	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	25	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	12	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.8%	0.5%	3,345
Other Non-Ferrous Metal	1.0%	0.5%	1,797	Tire	0.1%	0.1%	125
Remainder/Composite Metal	0.2%	0.1%	278	Remainder/Composite Special Waste	0.0%	0.0%	55
Organics	29.8%		53,950	Mixed Residue	2.3%		4,077
Food	0.0%	0.0%	43	Mixed Residue	2.3%	1.0%	4,077
Palm, Succulent, Coral Tree	13.4%	5.1%	24,254				
Leaves and Grass	5.5%	1.4%	9,931	Total	100.0%		181,059
Prunings and Trimmings	2.8%	0.7%	5,019				
Branches and Stumps	0.9%	0.5%	1,670	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	39	C&D Processing Residuals			0
Grass Sod	4.1%	3.6%	7,411				
Manures	0.1%	0.1%	175	Total Including Residuals			181,059
Diapers	0.0%	0.0%	0				
Textiles	2.7%	1.0%	4,876	Sample Count			623
Remainder/Composite Organics	0.3%	0.2%	532				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Military Substreams

Franchise-collected Military Substream

The field crew hand sorted 32 samples from the City's franchise-collected military waste substream. These samples were either refuse or C&D materials originating at one of two military bases in San Diego: Marine Corps Air Station (MCAS) or Naval Base San Diego (NAVSTA). The vehicle types and tons associated with this substream are shown in Table 33 and Table 34, respectively.

Table 33. Sample Count by Vehicle Type, Franchise-collected Military

Vehicle Type	Sample Count
Franchised Open-top Drag-on Containers	4
Other Open-top Drag-on Containers	2
Packer Trucks	24
Extra Large Vehicles	2
Total	32

Table 34. Included Substreams and Tons, Franchise-collected Military

Included Substreams	Tons
Franchise Collected Military	21,480
Total Disposal in Substream	21,480

Key Findings

As shown in Figure 32, 36% of the franchise-collected military waste substream is Compostable/Potentially Compostable, and 20% of the waste is Recyclable. Potentially Recoverable materials, shown in green, accounts for 19% of this substream. The three recoverable fractions combined account for slightly more than three quarters (76%) of the franchise-collected military substream's disposed waste. The waste composition data by material class are presented in Figure 33. **Construction & Demolition** (33%) and **Paper** (22%) are the two most prevalent material classes.

Figure 32. Composition by Recoverability Group, Franchise-collected Military

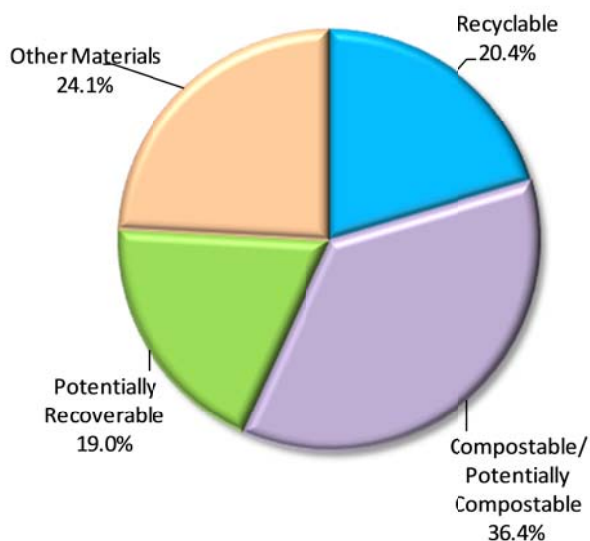
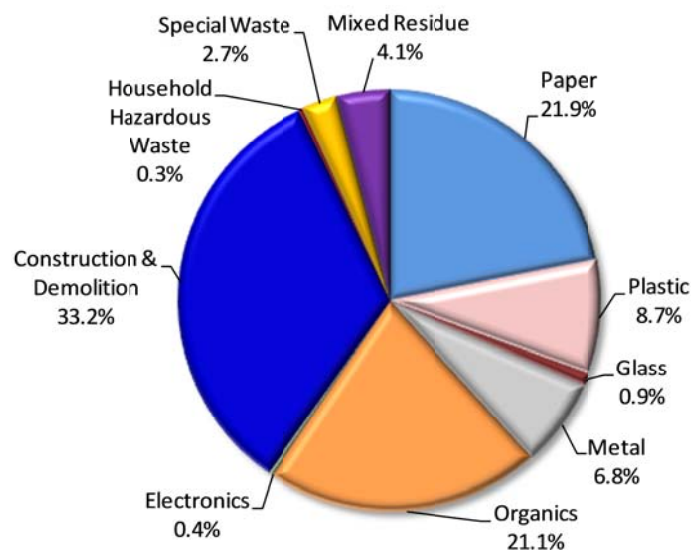


Figure 33. Composition by Material Class, Franchise-collected Military



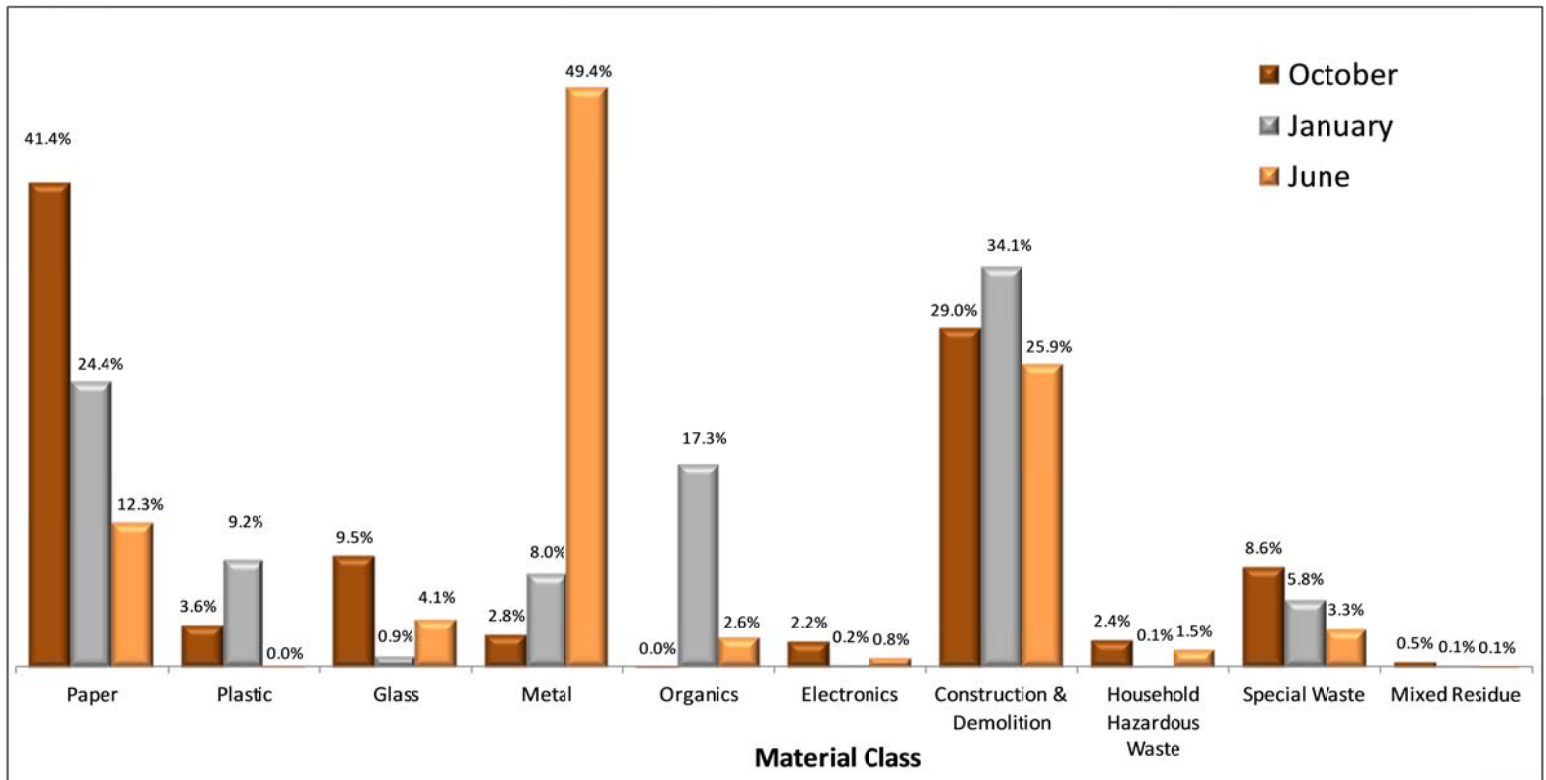
The ten most prevalent disposed materials are shown in Table 35. As shown, *clean pallets and crates* (13%), *food* (13%), and *clean engineered wood* (9%) are the three most prevalent materials; together they represent approximately 35% of franchise-collected military disposal in the City.

**Table 35. Ten Most Prevalent Disposed Material Types,
Franchise-collected Military, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Clean Pallets and Crates	13.1%	13.1%	2,806
Food	12.7%	25.8%	2,728
Clean Engineered Wood	8.9%	34.6%	1,908
Other Wood Waste	7.6%	42.3%	1,642
Uncoated Corrugated Cardboard	7.4%	49.7%	1,583
Compostable/Soiled Paper	5.9%	55.6%	1,274
Mixed Residue	4.1%	59.7%	874
Textiles	3.9%	63.6%	840
Mixed Waste Paper	3.4%	66.9%	720
Remainder/Composite Metal	3.3%	70.2%	713
Subtotal	70.2%		15,088
All other material types	29.8%		6,393
Total	100.0%		21,480

As illustrated in Figure 34 the franchise-collected military substream material class composition is highly variable by season. **Metal** (49%) is highest in June, while **Paper** (41%), **Glass** (10%), and **Electronics** (2%) were all highest in October. **Plastic** (9%), **Organics** (17%), and **Construction and Demolition** (34%) all displayed seasonal highs in January.

Figure 34. Seasonal Composition by Material Class, Franchise-collected Military, 2012



The detailed composition of the franchise-collected military substream is shown in Table 36.

Table 36. Detailed Waste Composition, Franchise-collected Military, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	21.9%		4,703	Electronics	0.4%		80
Uncoated Corrugated Cardboard	7.4%	3.5%	1,583	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.2%	0.4%	53
Paper Bags	0.4%	0.2%	80	Computer-Related Electronics	0.1%	0.1%	20
Newspaper	0.3%	0.3%	75	Other Consumer Electronics	0.0%	0.1%	7
White Ledger Paper	2.8%	1.8%	612	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	3.4%	0.9%	720				
Magazines	0.3%	0.1%	56	Construction & Demolition	33.2%		7,133
Phone Books and Directories	0.0%	0.0%	0	Concrete	0.2%	0.3%	35
Compostable/Soiled Paper	5.9%	2.9%	1,274	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	5	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	1.4%	0.8%	299	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	8.7%		1,873	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	9	Other Asphalt Roofing Material	0.0%	0.0%	5
Non-CRV HDPE Containers	0.3%	0.2%	66	Clean Dimensional Lumber	1.3%	1.5%	290
CRV PETE Containers	0.5%	0.3%	113	Clean Engineered Wood	8.9%	11.3%	1,908
Non-CRV PETE Containers	0.2%	0.1%	40	Clean Pallets and Crates	13.1%	6.9%	2,806
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	7.6%	3.7%	1,642
Miscellaneous Plastic Containers	0.5%	0.2%	114	Clean Gypsum Board	0.0%	0.0%	0
Plastic Grocery and Merchandise Bags	0.2%	0.1%	51	Painted/Demolition Gypsum Board	0.1%	0.1%	21
Clean Film Plastic	0.5%	0.3%	105	Carpet & Carpet Padding	0.3%	0.5%	63
Dirty Film Plastic	2.4%	1.0%	518	Rock, Soil and Fines	0.4%	0.7%	95
Durable Plastic Items	1.9%	1.0%	405	Contaminated Soil, Street Sweepings, Drain Cleaning	0.1%	0.2%	27
Expanded Polystyrene	0.5%	0.3%	116	Remainder/Composite C&D	1.1%	1.4%	242
Remainder/Composite Plastic	1.6%	1.1%	336				
				Household Hazardous Waste	0.3%		56
Glass	0.9%		200	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.2%	0.1%	46	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.1%	0.0%	15	Vehicle and Equipment Fluids	0.0%	0.0%	1
CRV Brown Glass Bottles	0.1%	0.1%	30	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	2	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	9	Household Batteries	0.0%	0.0%	3
Non-CRV other Colored Glass Bottles and Containers	0.1%	0.2%	29	Sharps	0.0%	0.0%	0
Flat Glass	0.0%	0.0%	1	Pharmaceuticals	0.2%	0.4%	51
Remainder/Composite Glass	0.3%	0.3%	68	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	6.8%		1,456				
Tin/Steel Cans	0.2%	0.1%	39	Special Waste	2.7%		581
Major Appliances	0.5%	0.8%	105	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.8%	1.8%	396	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.4%	0.2%	85	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.1%	8	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.5%	3.0%	539
Other Non-Ferrous Metal	0.5%	0.5%	111	Tire	0.0%	0.0%	0
Remainder/Composite Metal	3.3%	3.1%	713	Remainder/Composite Special Waste	0.2%	0.3%	42
Organics	21.1%		4,524	Mixed Residue	4.1%		874
Food	12.7%	5.7%	2,728	Mixed Residue	4.1%	4.9%	874
Palm, Succulent, Coral Tree	1.6%	1.9%	340				
Leaves and Grass	1.0%	1.1%	218	Total	100.0%		21,480
Prunings and Trimmings	0.6%	0.5%	126	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.2%	0.3%	41	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			21,480
Manures	0.0%	0.0%	0				
Diapers	0.1%	0.2%	32	Sample Count			32
Textiles	3.9%	2.2%	840				
Remainder/Composite Organics	0.9%	0.5%	199				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-Haul Military Substream

The field crew visually characterized 32 samples from the self-haul military substream. These samples were either refuse or C&D materials originating at military base within San Diego County. The secondary substreams within the self-haul military substream and their associated vehicle types and tonnages are shown in Table 37 and Table 38, respectively.

Table 37. Sample Count by Vehicle Type, Self-haul Military

Vehicle Type	Sample Count
Small Vehicles	2
Large Vehicles	9
Extra Large Vehicles	21
Total	32

Table 38. Included Substreams and Tons, Self-haul Military

Included Substreams	Tons
Military Self-haul Small Vehicles	36
Military Self-haul Large Vehicles	501
Military Self-haul Extra Large Vehicles	2,960
Total Disposal in Substream	3,497

Key Findings

The recoverability and material class findings for the self-haul military substream are shown in Figure 35 and Figure 36, respectively. Two thirds (66%) of self-haul military waste is recoverable: 10% is Compostable/Potentially Compostable, 23% is Recyclable, and 33% is Potentially Recoverable. The substream's waste is almost entirely **Construction and Demolition** materials (80%).

Figure 35. Composition by Recoverability Group, Self-haul Military

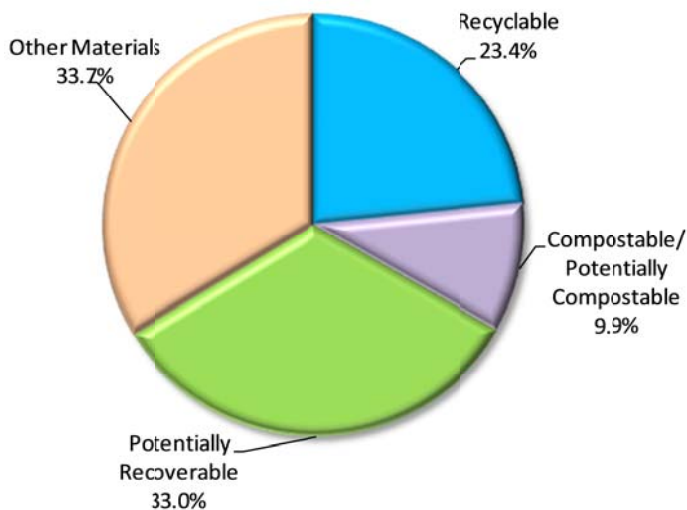
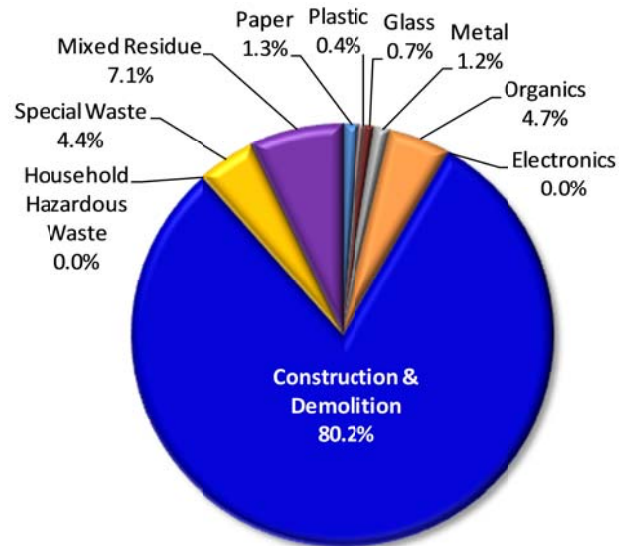


Figure 36. Composition by Material Class, Self-haul Military

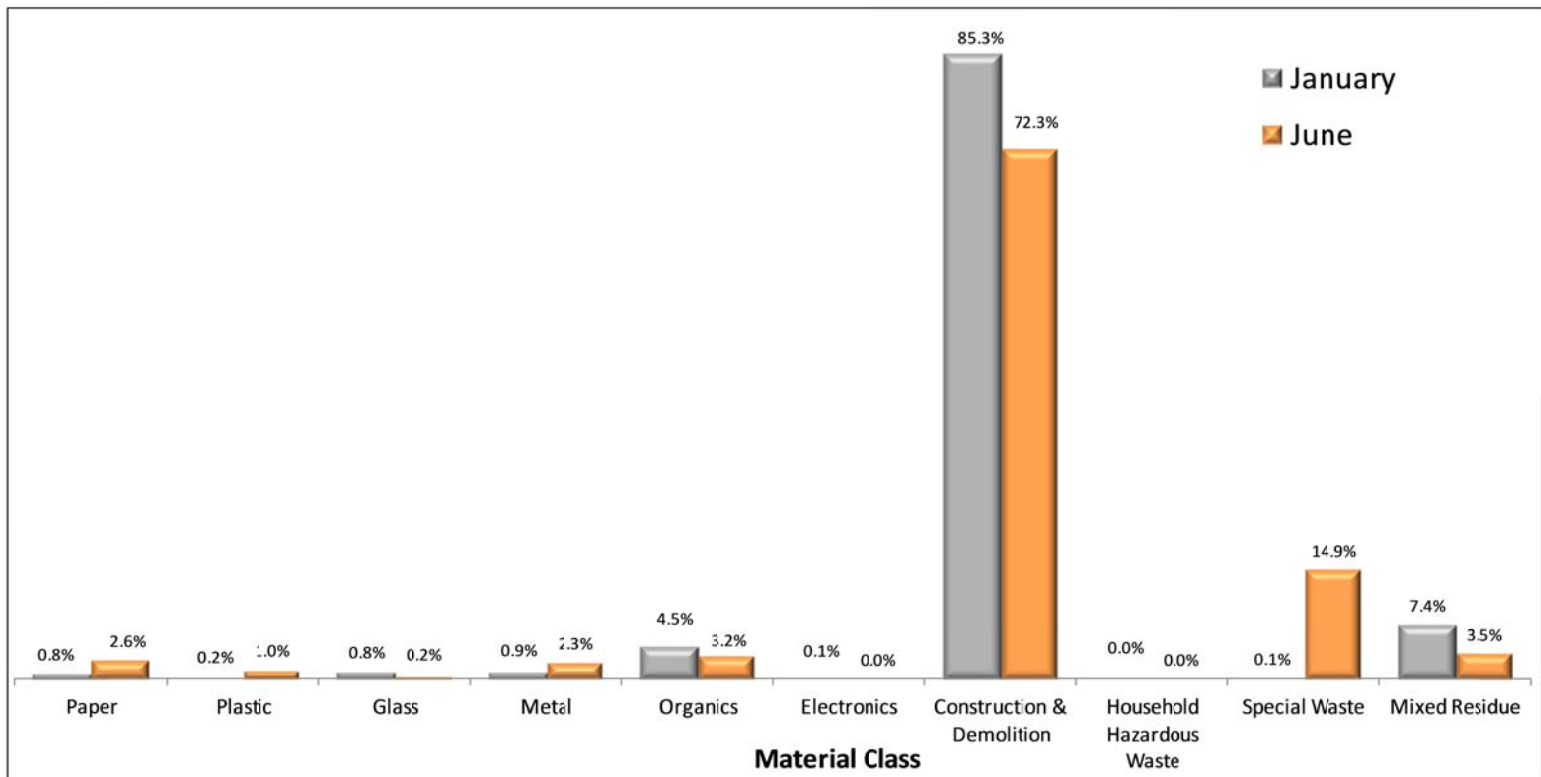


The ten most prevalent disposed materials are shown in Table 39. *Rock, soil, and fines* (22%); *asphalt paving* (21%); and *other wood waste* (15%) are the three most prevalent material types; together they represent approximately 58% of the self-haul military substream.

**Table 39. Ten Most Prevalent Disposed Material Types,
Self-haul Military, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Rock, Soil and Fines	22.4%	22.4%	782
Asphalt Paving	20.7%	43.1%	725
Other Wood Waste	15.2%	58.3%	532
Mixed Residue	7.1%	65.4%	248
Contaminated Soil, Street Sweepings, Drain Cleaning	7.1%	72.5%	247
Clean Pallets and Crates	5.1%	77.6%	180
Bulky Items	4.4%	82.1%	155
Palm, Succulent, Coral Tree	4.0%	86.1%	140
Carpet & Carpet Padding	2.6%	88.7%	92
Clean Engineered Wood	2.0%	90.7%	71
Subtotal	90.7%		3,173
All other material types	9.3%		324
Total	100.0%		3,497

Because the project team added the military self-haul substream part way through the study, we have only two months of data for comparisons. Figure 37 displays the seasonal composition by material class within the self-haul military substream. The prevalence of about half the material classes decreased between the two sample seasons and the other half increased.

Figure 37. Seasonal Composition by Material Class, Self-haul Military, 2012

The detailed composition of the self-haul military substream is shown in Table 40.

Table 40. Detailed Waste Composition, Self-haul Military, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.3%		45	Electronics	0.0%		1
Uncoated Corrugated Cardboard	0.5%	0.4%	19	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	1	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	0	Computer-Related Electronics	0.0%	0.0%	0
Newspaper	0.0%	0.1%	1	Other Consumer Electronics	0.0%	0.1%	1
White Ledger Paper	0.1%	0.2%	5	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.3%	0.2%	9				
Magazines	0.0%	0.0%	0	Construction & Demolition	80.2%		2,804
Phone Books and Directories	0.0%	0.0%	0	Concrete	0.9%	1.2%	30
Compostable/Soiled Paper	0.2%	0.2%	6	Asphalt Paving	20.7%	28.4%	725
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.1%	0.3%	4
Remainder/Composite Paper	0.1%	0.1%	4	Roofing Tar Paper/Felt	0.1%	0.1%	2
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.4%		15	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	0.4%	0.6%	13
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	2.0%	2.3%	71
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	5.1%	4.0%	180
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	15.2%	14.2%	532
Miscellaneous Plastic Containers	0.0%	0.0%	0	Clean Gypsum Board	0.6%	1.0%	23
Plastic Grocery and Merchandise Bags	0.0%	0.0%	0	Painted/Demolition Gypsum Board	1.2%	1.7%	43
Clean Film Plastic	0.1%	0.1%	2	Carpet & Carpet Padding	2.6%	2.9%	92
Dirty Film Plastic	0.0%	0.0%	1	Rock, Soil and Fines	22.4%	25.1%	782
Durable Plastic Items	0.2%	0.2%	8	Contaminated Soil, Street Sweepings, Drain Cleaning	7.1%	6.1%	247
Expanded Polystyrene	0.0%	0.0%	0	Remainder/Composite C&D	1.7%	2.2%	58
Remainder/Composite Plastic	0.1%	0.1%	4				
				Household Hazardous Waste	0.0%		0
Glass	0.7%		24	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.1%	0.3%	5	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.5%	0.8%	19	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	1.2%		42				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	4.4%		155
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.3%	0.4%	12	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	0	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	4.4%	3.4%	155
Other Non-Ferrous Metal	0.4%	0.4%	15	Tire	0.0%	0.0%	0
Remainder/Composite Metal	0.4%	0.6%	14	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	4.7%		163	Mixed Residue	7.1%		248
Food	0.0%	0.0%	0	Mixed Residue	7.1%	6.5%	248
Palm, Succulent, Coral Tree	4.0%	3.5%	140				
Leaves and Grass	0.0%	0.0%	1	Total	100.0%		3,497
Prunings and Trimmings	0.0%	0.0%	0				
Branches and Stumps	0.2%	0.2%	5	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.0%	0.0%	0				
Manures	0.0%	0.0%	0	Total Including Residuals			3,497
Diapers	0.0%	0.0%	0				
Textiles	0.5%	0.5%	17	Sample Count			32
Remainder/Composite Organics	0.0%	0.0%	0				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Substreams

Self-haul Flat Rate Vehicles Substream

This substream's composition data is based on 374 visually characterized self-haul flat rate samples. The secondary substreams within this substream and their associated tonnages are shown in Table 41. These samples were from both within and outside the San Diego city limits and included refuse and C&D loads.

**Table 41. Included Substreams and Tons,
Self-haul Flat Rate Vehicles**

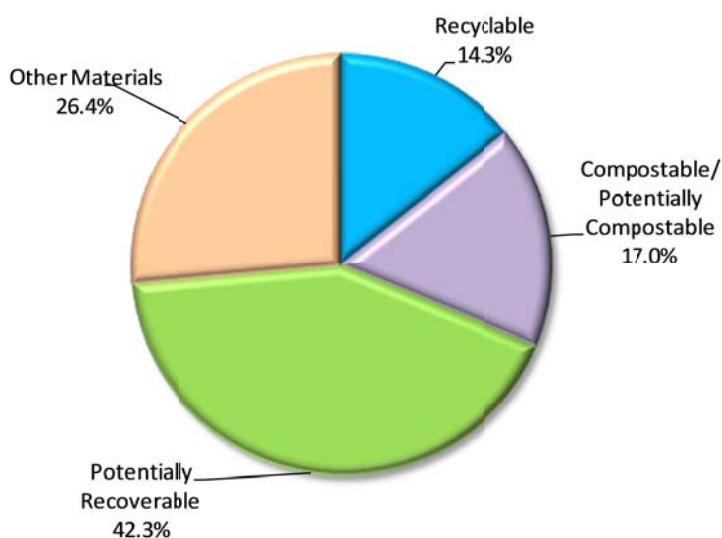
Included Substreams	Tons
Residential Self-haul Flat Rate Vehicles	34,230
Commercial Self-haul Flat Rate Vehicles	40,466
Total Disposal in Substream	74,696

Key Findings

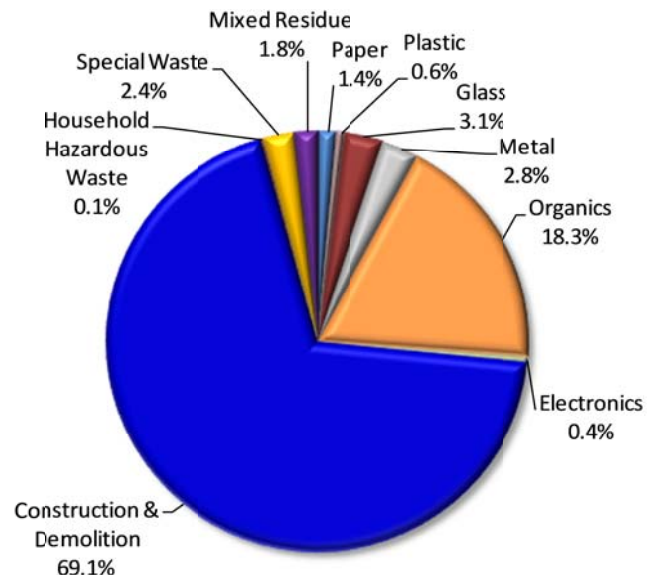
As shown in Figure 38, approximately 42% of the self-haul flat rate vehicles substream is Potentially Recoverable, shown in green, and slightly less than 74% of the substream is recoverable (either Compostable/Potentially Compostable, Recyclable, or Potentially Recoverable).

The waste composition data by material class are presented in Figure 39. **Construction & Demolition** (69%) and **Organics** (18%) are the two most prevalent material classes and the only two that represent more than 3% of self-haul flat rate vehicles substream.

**Figure 38. Composition by Recoverability Group,
Self-haul Flat Rate Vehicles, 2012**



**Figure 39. Composition by Material Class,
Self-haul Flat Rate Vehicles, 2012**



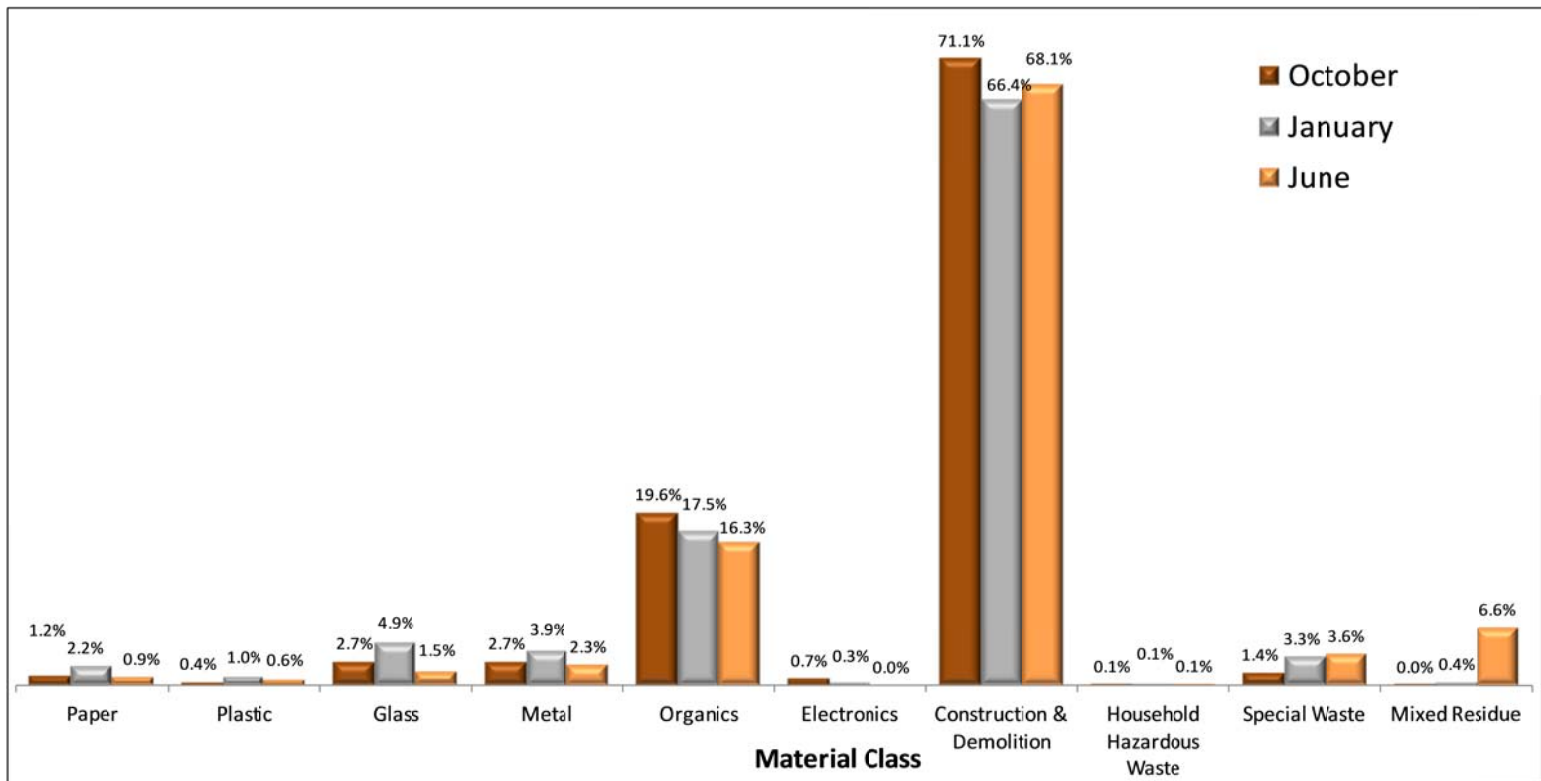
The ten most prevalent disposed materials are shown in Table 42. As shown, *carpet and carpet padding* (24%), *concrete* (10%), and *other wood waste* (10%) are the three most prevalent materials; together they represent close to half (43%) of self-haul flat rate vehicles substream.

**Table 42. Ten Most Prevalent Disposed Material Types,
Self-haul Flat Rate Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	23.6%	23.6%	17,598
Concrete	10.0%	33.5%	7,451
Other Wood Waste	9.5%	43.1%	7,122
Rock, Soil and Fines	8.7%	51.8%	6,509
Remainder/Composite C&D	8.0%	59.7%	5,946
Palm, Succulent, Coral Tree	5.8%	65.5%	4,329
Leaves and Grass	4.7%	70.2%	3,518
Textiles	3.0%	73.2%	2,227
Prunings and Trimmings	2.3%	75.5%	1,732
Bulky Items	2.2%	77.8%	1,649
Subtotal	77.8%		58,082
All other material types	22.2%		16,614
Total	100.0%		74,696

Figure 40 displays the seasonal composition by material class of the self-haul flat rate vehicle substream. Most material classes show little seasonal variability.

Figure 40. Seasonal Composition by Material Class, Self-haul Flat Rate Vehicles, 2012



The detailed composition of the self-haul flat rate vehicles substream can be found in Table 43.

Table 43. Detailed Waste Composition, Self-haul Flat Rate Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.4%		1,029	Electronics	0.4%		323
Uncoated Corrugated Cardboard	0.6%	0.2%	464	Brown Goods	0.4%	0.3%	267
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	8	Computer-Related Electronics	0.0%	0.0%	21
Newspaper	0.1%	0.1%	60	Other Consumer Electronics	0.0%	0.1%	34
White Ledger Paper	0.1%	0.1%	58	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.4%	0.2%	325				
Magazines	0.0%	0.0%	12	Construction & Demolition	69.4%		51,850
Phone Books and Directories	0.0%	0.0%	0	Concrete	10.0%	4.4%	7,451
Compostable/Soiled Paper	0.0%	0.0%	10	Asphalt Paving	0.2%	0.4%	171
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.5%	0.4%	402
Remainder/Composite Paper	0.1%	0.1%	92	Roofing Tar Paper/Felt	0.4%	0.2%	275
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.6%		445	Built-Up Roofing	0.6%	1.0%	462
CRV HDPE Containers	0.0%	0.0%	1	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	6	Clean Dimensional Lumber	2.0%	1.0%	1,522
CRV PETE Containers	0.0%	0.0%	10	Clean Engineered Wood	1.7%	0.8%	1,265
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	0.5%	0.2%	345
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	9.5%	3.4%	7,122
Miscellaneous Plastic Containers	0.0%	0.0%	13	Clean Gypsum Board	1.6%	1.2%	1,169
Plastic Grocery and Merchandise Bags	0.0%	0.0%	2	Painted/Demolition Gypsum Board	2.2%	0.9%	1,613
Clean Film Plastic	0.1%	0.0%	59	Carpet & Carpet Padding	23.6%	6.0%	17,598
Dirty Film Plastic	0.0%	0.0%	24	Rock, Soil and Fines	8.7%	2.6%	6,509
Durable Plastic Items	0.3%	0.1%	206	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	30	Remainder/Composite C&D	8.0%	2.5%	5,946
Remainder/Composite Plastic	0.1%	0.0%	93				
				Household Hazardous Waste	0.1%		91
Glass	3.0%		2,229	Oil-Based Paint	0.0%	0.1%	26
CRV Clear Glass Bottles	0.0%	0.0%	9	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	6	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	3	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	1
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	1.4%	0.9%	1,064	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.5%	0.7%	1,148	CFL, Fluorescent Tube and Other Mercury-Containing	0.1%	0.1%	64
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	2.8%		2,127				
Tin/Steel Cans	0.1%	0.1%	55	Special Waste	2.4%		1,794
Major Appliances	0.0%	0.0%	26	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.4%	0.4%	1,064	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	4	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.2%	0.7%	1,649
Other Non-Ferrous Metal	1.2%	0.7%	881	Tire	0.2%	0.2%	116
Remainder/Composite Metal	0.1%	0.1%	98	Remainder/Composite Special Waste	0.0%	0.1%	28
Organics	18.1%		13,521	Mixed Residue	1.7%		1,287
Food	0.0%	0.0%	13	Mixed Residue	1.7%	0.8%	1,287
Palm, Succulent, Coral Tree	5.8%	1.6%	4,329				
Leaves and Grass	4.7%	1.4%	3,518	Total	100.0%		74,696
Prunings and Trimmings	2.3%	1.0%	1,732				
Branches and Stumps	0.4%	0.2%	319	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.1%	0.1%	39	C&D Processing Residuals			0
Grass Sod	1.2%	0.6%	894				
Manures	0.0%	0.0%	0	Total Including Residuals			74,696
Diapers	0.0%	0.0%	0				
Textiles	3.0%	1.2%	2,227	Sample Count			374
Remainder/Composite Organics	0.6%	0.4%	450				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Small Vehicles Substream

The self-haul small vehicles composition is the weighted average of 260 samples; 229 commercial samples, 29 residential samples, and two military samples. These self-haul small vehicles originated both within and outside the San Diego city limits and included refuse or C&D loads. The secondary substreams included in the composition and their associated tonnages are shown in Table 44.

Table 44. Included Substreams and Tons, Self-haul Small Vehicles

Included Substreams	Tons
Residential Self-haul Small Vehicles	6,153
Commercial Self-haul Small Vehicles	33,462
Military Self-haul Small Vehicles	36
Total Disposal in Substream	39,651

Key Findings

Figure 41 illustrates the recoverability of the self-haul small vehicles substream which is one third Potentially Recoverable materials (33%, shown in green). Compostable/Potentially Compostable materials account for one quarter of the self-haul small vehicles substream (25%). Together with Recyclable materials (12%), approximately 70% of the substream is recoverable. Nearly two thirds of the self-haul small vehicles substream is in the **Construction & Demolition** material class (61%), as shown in Figure 42.

Figure 41. Composition by Recoverability Group, Self-haul Small Vehicles, 2012

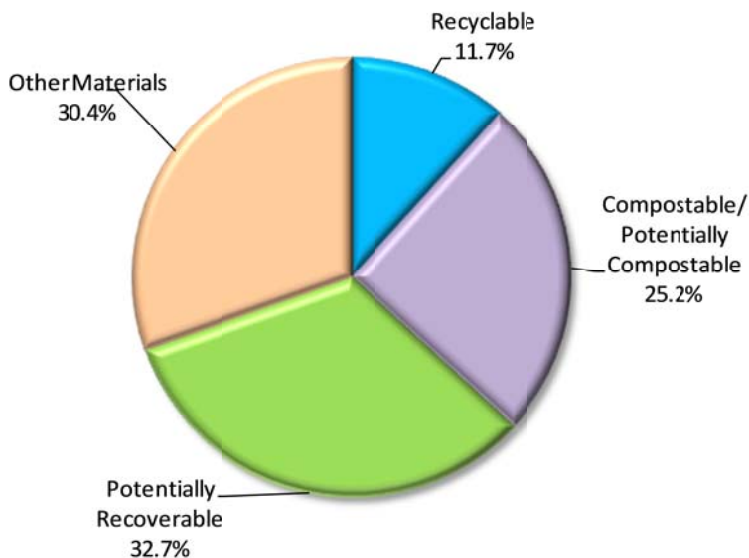
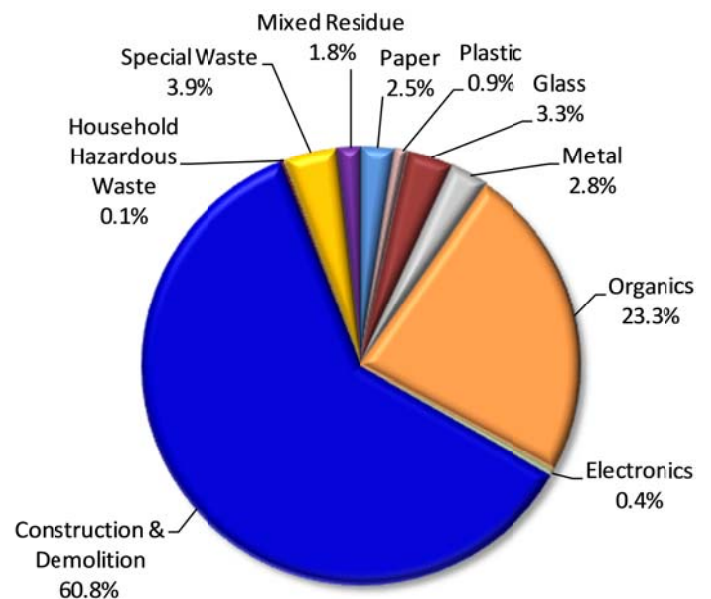


Figure 42. Composition by Material Class, Self-haul Small Vehicles, 2012



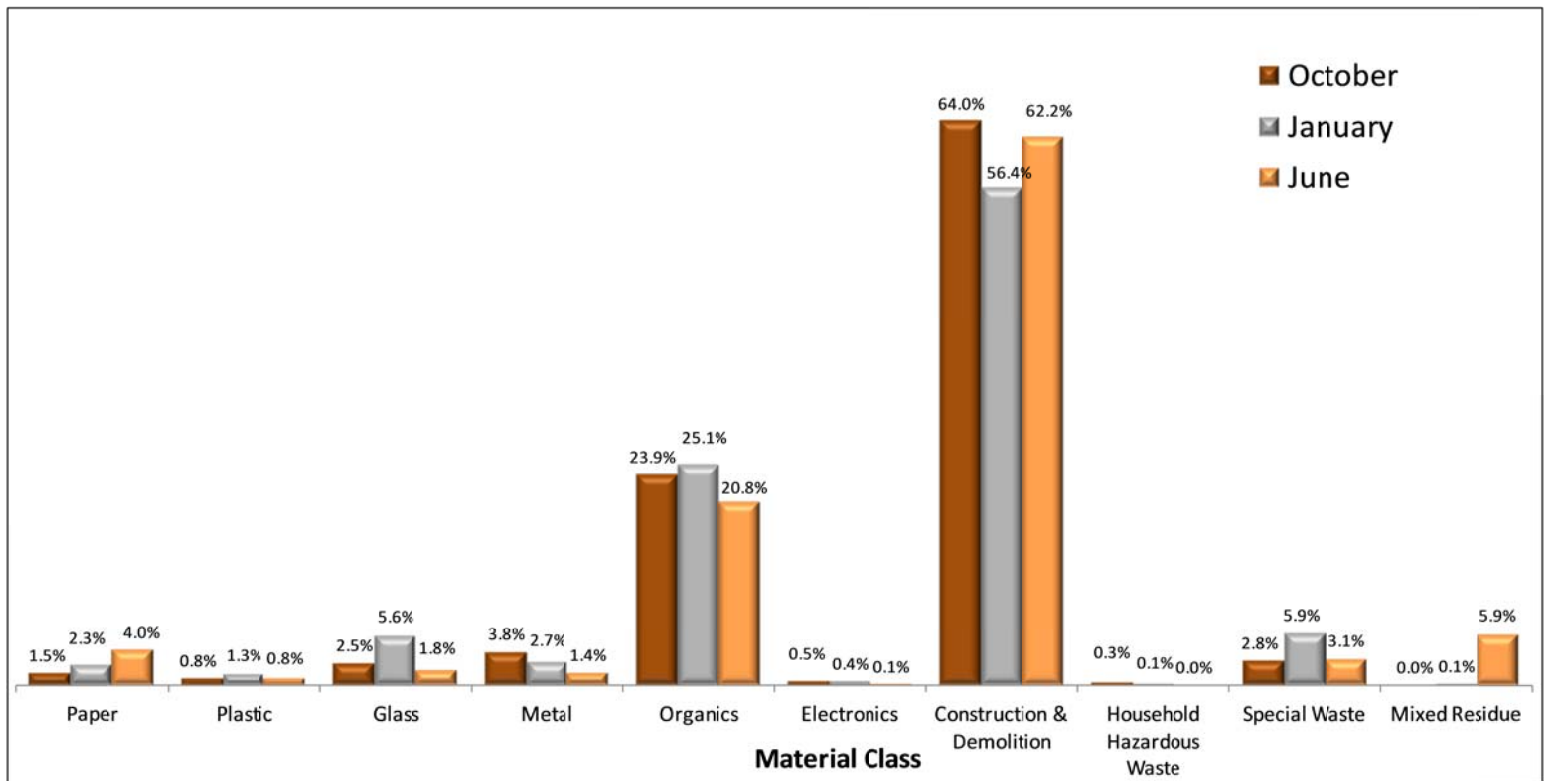
The ten most prevalent material types (see Table 45) combined account for nearly three quarters (72%) of the self-haul small vehicles substream. *Carpet and carpet padding* (14%) and *other wood waste* (12%) are the most two prevalent materials and the only material types greater than 10% of the substream.

**Table 45. Ten Most Prevalent Disposed Material Types,
Self-haul Small Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	14.3%	14.3%	5,659
Other Wood Waste	12.2%	26.5%	4,836
Palm, Succulent, Coral Tree	9.7%	36.1%	3,833
Remainder/Composite C&D	8.4%	44.6%	3,336
Concrete	6.7%	51.2%	2,648
Leaves and Grass	5.3%	56.5%	2,091
Rock, Soil and Fines	5.1%	61.6%	2,035
Bulky Items	3.9%	65.5%	1,534
Prunings and Trimmings	3.2%	68.8%	1,288
Textiles	3.2%	71.9%	1,265
Subtotal	71.9%		28,526
All other material types	28.1%		11,125
Total	100.0%		39,651

As illustrated in Figure 43, **Glass** doubled from October (3%) to January (6%) before declining again in June.

Figure 43. Seasonal Composition by Material Class, Self-haul Small Vehicles, 2012



The detailed composition of the self-haul small vehicles substream can be found in Table 46.

Table 46. Detailed Waste Composition, Self-haul Small Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.5%		991	Electronics	0.4%		165
Uncoated Corrugated Cardboard	1.1%	0.5%	454	Brown Goods	0.3%	0.3%	105
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	7
Paper Bags	0.0%	0.0%	9	Computer-Related Electronics	0.1%	0.1%	33
Newspaper	0.0%	0.0%	8	Other Consumer Electronics	0.1%	0.0%	21
White Ledger Paper	0.0%	0.0%	5	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.9%	0.3%	346				
Magazines	0.1%	0.1%	51	Construction & Demolition	60.8%		24,089
Phone Books and Directories	0.0%	0.0%	0	Concrete	6.7%	2.3%	2,648
Compostable/Soiled Paper	0.0%	0.0%	10	Asphalt Paving	0.2%	0.4%	92
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	2.0%	2.5%	775
Remainder/Composite Paper	0.3%	0.1%	108	Roofing Tar Paper/Felt	0.1%	0.1%	49
				Roofing Mastic	0.0%	0.0%	11
Plastic	0.9%		375	Built-Up Roofing	0.0%	0.0%	8
CRV HDPE Containers	0.0%	0.0%	1	Other Asphalt Roofing Material	0.5%	0.6%	198
Non-CRV HDPE Containers	0.0%	0.0%	11	Clean Dimensional Lumber	3.2%	1.7%	1,258
CRV PETE Containers	0.0%	0.0%	15	Clean Engineered Wood	2.2%	0.9%	878
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	2.4%	1.8%	932
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	12.2%	3.1%	4,836
Miscellaneous Plastic Containers	0.1%	0.1%	34	Clean Gypsum Board	1.0%	0.5%	385
Plastic Grocery and Merchandise Bags	0.0%	0.0%	3	Painted/Demolition Gypsum Board	2.5%	1.0%	988
Clean Film Plastic	0.1%	0.0%	30	Carpet & Carpet Padding	14.3%	8.7%	5,659
Dirty Film Plastic	0.0%	0.0%	14	Rock, Soil and Fines	5.1%	2.9%	2,035
Durable Plastic Items	0.4%	0.2%	174	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	18	Remainder/Composite C&D	8.4%	2.3%	3,336
Remainder/Composite Plastic	0.2%	0.1%	74				
				Household Hazardous Waste	0.1%		58
Glass	3.3%		1,321	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.1%	0.1%	22	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	5	Vehicle and Equipment Fluids	0.0%	0.0%	5
CRV Brown Glass Bottles	0.0%	0.0%	14	Used Oil	0.1%	0.1%	24
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	7
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	5	Sharps	0.0%	0.0%	0
Flat Glass	2.2%	0.9%	868	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.0%	0.6%	407	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	18
				Remainder/Composite Household Hazardous	0.0%	0.0%	4
Metal	2.8%		1,117				
Tin/Steel Cans	0.1%	0.1%	36	Special Waste	3.9%		1,557
Major Appliances	0.2%	0.3%	74	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.2%	0.4%	490	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	16	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	12	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	3.9%	1.5%	1,534
Other Non-Ferrous Metal	0.7%	0.3%	276	Tire	0.1%	0.0%	22
Remainder/Composite Metal	0.5%	0.5%	214	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	23.3%		9,256	Mixed Residue	1.8%		722
Food	0.0%	0.0%	8	Mixed Residue	1.8%	0.8%	722
Palm, Succulent, Coral Tree	9.7%	2.8%	3,833				
Leaves and Grass	5.3%	1.7%	2,091	Total	100.0%		39,651
Prunings and Trimmings	3.2%	1.2%	1,288	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	1.0%	0.5%	382	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.3%	0.3%	121	Total Including Residuals			39,651
Manures	0.1%	0.2%	58				
Diapers	0.0%	0.0%	8	Sample Count			260
Textiles	3.2%	1.3%	1,265				
Remainder/Composite Organics	0.5%	0.3%	201				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Large Vehicles Substream

The field crew visually characterized 177 self-haul large vehicles. The included substreams and their associated tonnages are shown in Table 47. These samples were from both within and outside the San Diego city limits and included refuse and C&D loads.

Table 47. Included Substreams and Tons, Self-haul Large Vehicles

Included Substreams	Tons
Residential Self-haul Large Vehicles	2,008
Commercial Self-haul Large Vehicles	107,131
Military Self-haul Large Vehicles	501
Total Disposal in Substream	109,640

Key Findings

As shown in Figure 44, 68% of the self-haul large vehicles substream is recoverable. Of this recoverable fraction, 35% is Compostable/Potentially Compostable, 11% is Recyclable, and another 22% is Potentially Recoverable materials. Approximately half (51%) of the self-haul large vehicles tonnage is in the **Construction & Demolition** material class (see Figure 45). **Organics** (34%) is the second most prevalent material class.

Figure 44. Composition by Recoverability Group, Self-haul Large Vehicles, 2012

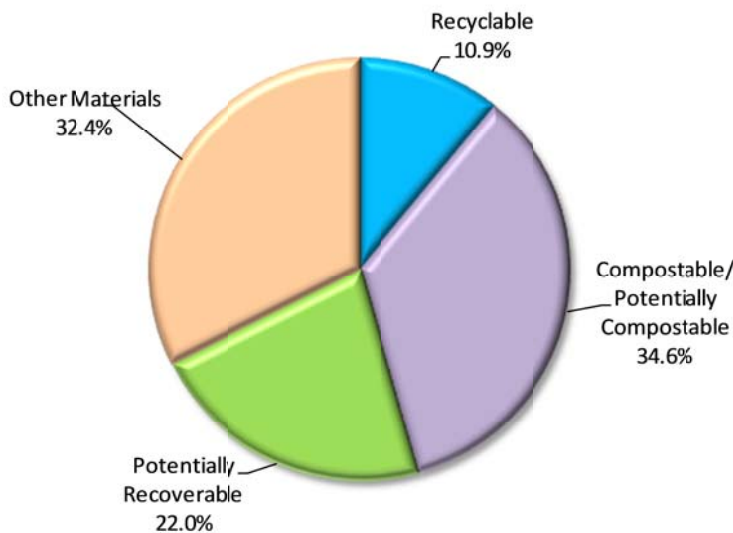
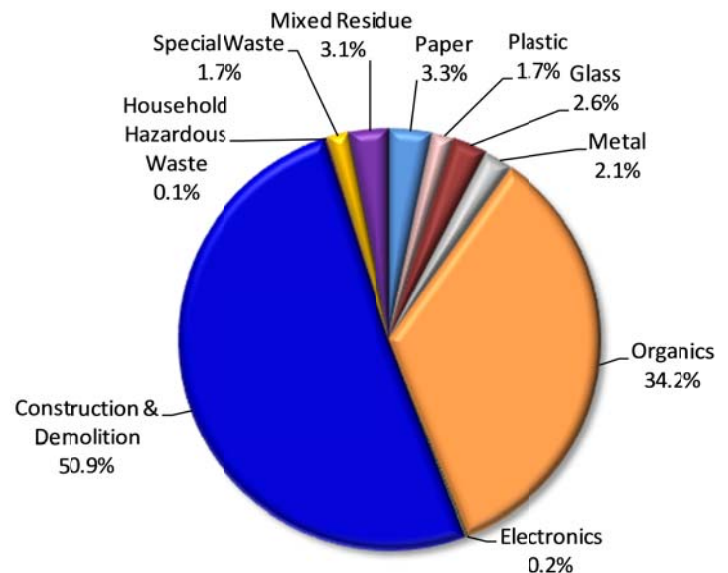


Figure 45. Composition by Material Class, Self-haul Large Vehicles, 2012



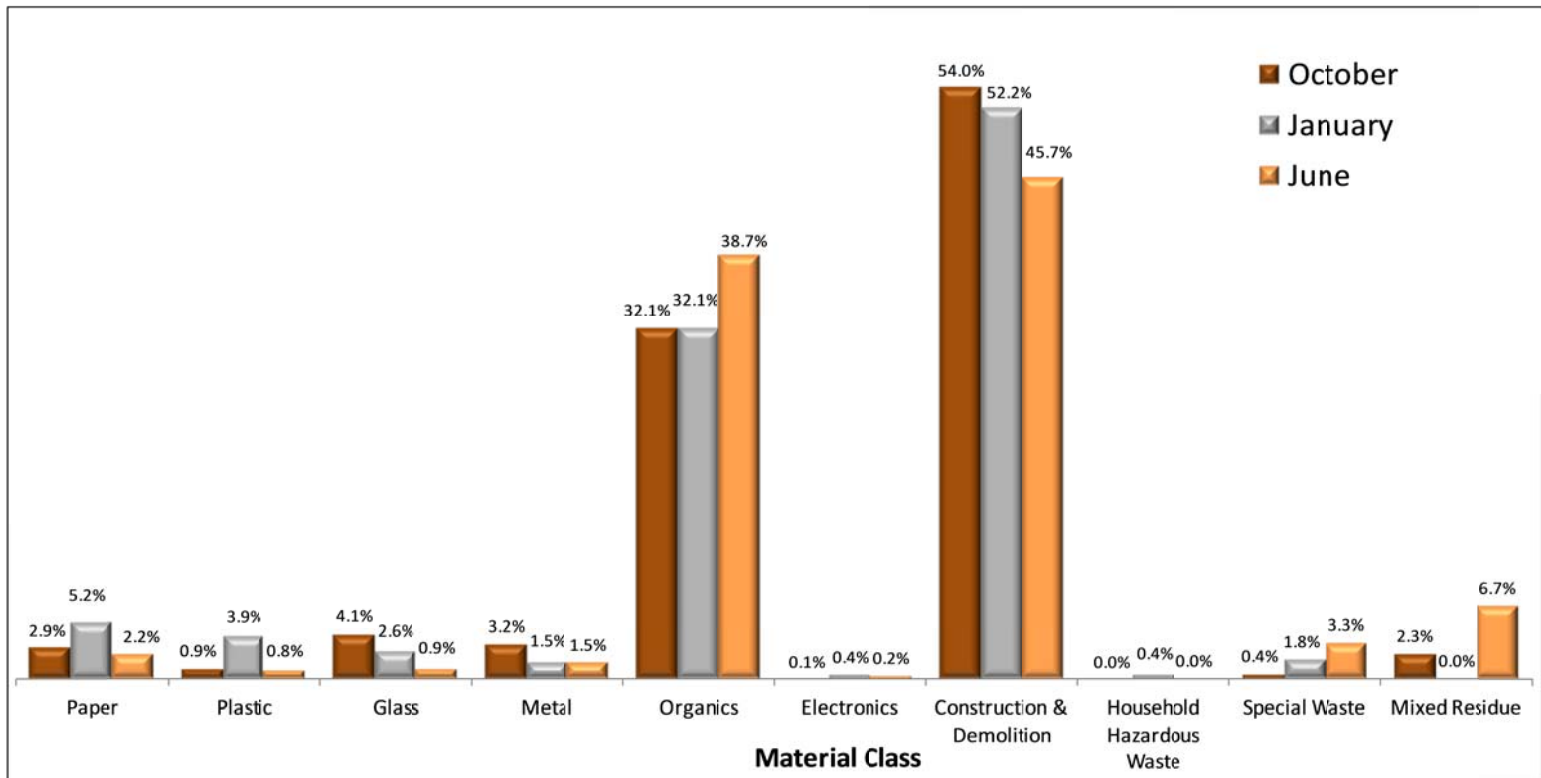
The ten most prevalent disposed materials are nearly two thirds of the self-haul large vehicles disposal (66%, Table 48). As shown, *palm, succulent, and coral tree* (16%); *other wood waste* (8%); and *rock, soil, and fines* (8%) are the three most prevalent materials; together they represent approximately 32% of the substream's disposal.

**Table 48. Ten Most Prevalent Disposed Material Types,
Self-haul Large Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Palm, Succulent, Coral Tree	15.9%	15.9%	17,438
Other Wood Waste	8.3%	24.2%	9,067
Rock, Soil and Fines	7.8%	32.0%	8,554
Remainder/Composite C&D	6.4%	38.4%	7,049
Grass Sod	6.1%	44.5%	6,671
Leaves and Grass	5.2%	49.7%	5,745
Contaminated Soil, Street Sweepings, Drain Cleaning	4.6%	54.3%	5,016
Carpet & Carpet Padding	4.5%	58.8%	4,883
Concrete	3.7%	62.4%	4,011
Textiles	3.2%	65.6%	3,468
Subtotal	65.6%		71,902
All other material types	34.4%		37,737
Total	100.0%		109,640

The self-haul large vehicle substream material class composition by season is summarized in Figure 46. **Glass, Metal, and Construction and Demolition** all exhibited a downward trend from October to June, while **Organics** exhibited an upward trend over the study period.

Figure 46. Seasonal Composition by Material Class, Self-haul Large Vehicles, 2012



The detailed composition of the self-haul large vehicles substream can be found in Table 49.

Table 49. Detailed Waste Composition, Self-haul Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	3.3%		3,587	Electronics	0.2%		229
Uncoated Corrugated Cardboard	1.7%	1.1%	1,824	Brown Goods	0.1%	0.1%	61
Waxed Corrugated Cardboard	0.0%	0.0%	2	CRT	0.0%	0.0%	15
Paper Bags	0.0%	0.0%	7	Computer-Related Electronics	0.0%	0.0%	21
Newspaper	0.1%	0.1%	96	Other Consumer Electronics	0.1%	0.1%	121
White Ledger Paper	0.1%	0.1%	61	Video Display Devices (non-CRT devices)	0.0%	0.0%	10
Mixed Waste Paper	1.0%	0.6%	1,053				
Magazines	0.1%	0.1%	74	Construction & Demolition	50.9%		55,801
Phone Books and Directories	0.0%	0.0%	2	Concrete	3.7%	4.4%	4,011
Compostable/Soiled Paper	0.0%	0.0%	47	Asphalt Paving	2.3%	3.6%	2,472
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.1%	0.9%	1,238
Remainder/Composite Paper	0.4%	0.3%	422	Roofing Tar Paper/Felt	1.9%	2.3%	2,079
				Roofing Mastic	0.0%	0.0%	17
Plastic	1.7%		1,855	Built-Up Roofing	1.4%	2.3%	1,538
CRV HDPE Containers	0.0%	0.0%	2	Other Asphalt Roofing Material	0.5%	0.9%	580
Non-CRV HDPE Containers	0.0%	0.0%	30	Clean Dimensional Lumber	1.6%	0.8%	1,755
CRV PETE Containers	0.0%	0.0%	23	Clean Engineered Wood	1.7%	0.9%	1,886
Non-CRV PETE Containers	0.0%	0.0%	5	Clean Pallets and Crates	2.2%	1.4%	2,441
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	8.3%	3.1%	9,067
Miscellaneous Plastic Containers	0.0%	0.0%	27	Clean Gypsum Board	0.7%	0.5%	742
Plastic Grocery and Merchandise Bags	0.0%	0.0%	14	Painted/Demolition Gypsum Board	2.3%	1.3%	2,473
Clean Film Plastic	0.7%	0.8%	819	Carpet & Carpet Padding	4.5%	1.8%	4,883
Dirty Film Plastic	0.1%	0.1%	144	Rock, Soil and Fines	7.8%	4.6%	8,554
Durable Plastic Items	0.4%	0.2%	433	Contaminated Soil, Street Sweepings, Drain Cleaning	4.6%	6.4%	5,016
Expanded Polystyrene	0.2%	0.2%	236	Remainder/Composite C&D	6.4%	3.3%	7,049
Remainder/Composite Plastic	0.1%	0.1%	123				
				Household Hazardous Waste	0.1%		133
Glass	2.6%		2,873	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	8	Water-Based Paint	0.1%	0.1%	80
Non-CRV Clear Glass Bottles and Containers	0.0%	0.1%	52	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	13
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	1.1%	0.9%	1,225	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.4%	1.5%	1,588	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	7
				Remainder/Composite Household Hazardous	0.0%	0.0%	33
Metal	2.1%		2,355				
Tin/Steel Cans	0.1%	0.1%	76	Special Waste	1.7%		1,891
Major Appliances	0.0%	0.0%	21	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.9%	0.4%	977	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	13	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.7%	0.7%	1,853
Other Non-Ferrous Metal	1.0%	0.7%	1,068	Tire	0.0%	0.0%	11
Remainder/Composite Metal	0.2%	0.1%	200	Remainder/Composite Special Waste	0.0%	0.0%	27
Organics	34.2%		37,532	Mixed Residue	3.1%		3,384
Food	0.0%	0.0%	31	Mixed Residue	3.1%	1.7%	3,384
Palm, Succulent, Coral Tree	15.9%	8.2%	17,438				
Leaves and Grass	5.2%	2.1%	5,745	Total	100.0%		109,640
Prunings and Trimmings	2.4%	1.0%	2,617				
Branches and Stumps	1.0%	0.7%	1,090	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	6.1%	6.0%	6,671				
Manures	0.1%	0.2%	117	Total Including Residuals			109,640
Diapers	0.0%	0.0%	0				
Textiles	3.2%	1.5%	3,468	Sample Count			177
Remainder/Composite Organics	0.3%	0.4%	354				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

4. Automated Curbside Green Waste Composition

The project team hand sorted 12 automated curbside green waste samples to determine the types and proportion of contamination in curbside green waste material. The team used a modified hand-sorting process for these loads. Unlike the 200 pound hand-sorted samples from the disposed waste streams, a green waste sample consisted of an entire several ton load of curbside green waste material. After the route driver tipped the load, a loader spread the entire sample into a layer one foot in height. To sort the material, the field crew worked across the entire load removing and weighing any contaminants.

The load contamination rate is based on the weight of the sorted contaminants divided by the total load weight prior to sorting. The project team calculated the contamination rate to be, very low, 0.6%. This means that automated green waste contains 99.4% acceptable materials, by weight. The most prevalent contaminants are *other contaminants* (24%), *painted/treated wood* (18%), and *recyclable paper and paper cartons* (13%). Examples of *other contaminants* include electronics, carpet, concrete, hazardous items, and bulky items. See Figure 47 for examples.

The contaminant composition data is shown in Table 50. **It is important to note that Table 50 reflects only the composition of the contaminants, which comprise a very small portion (0.6%) of the entire load.**

Table 50. Green Waste Contamination Composition

Material	Est. % of Contaminants	+ / -	Material	Est. % of Contaminants	+ / -
Paper	15.3%		Non-compostable Organics	25.6%	
Recyclable Paper and Paper Cartons	12.6%	4.0%	Diapers	0.0%	0.0%
Waxed/Coated Cardboard	0.0%	0.0%	Textiles	3.2%	1.2%
Other Paper	2.7%	0.8%	Painted/Treated Wood	17.7%	11.3%
Plastic	12.8%		Pet Waste	4.4%	1.6%
Recyclable Plastic Bottles	2.6%	1.0%	Animal Carcasses	0.0%	0.0%
Recyclable Durable Plastic Containers	3.9%	1.5%	Other Organics	0.3%	0.3%
Film Plastic	3.1%	1.3%	Other Hazardous Items	0.2%	
Plastic Chemical Bottles	0.1%	0.1%	Oils or Vehicle Fluids	0.1%	0.1%
Other Plastic	3.0%	1.3%	Batteries	0.1%	0.1%
Metal	3.7%		Large Metal Appliances & Equipment	2.0%	
CRV Cans	0.7%	0.4%	Engine Parts	2.0%	2.2%
Other Metal	3.0%	1.1%	Lawn Mowers	0.0%	0.0%
Glass	6.9%		Other Contaminants	33.5%	
Recyclable Glass	3.8%	2.8%	Bagged Garbage	9.9%	5.2%
Other Glass	0.2%	0.2%	Other Contaminants	23.6%	16.8%
Ceramic, Terra Cotta, and Pottery	2.9%	2.0%	Acceptable Green Waste Materials	99.4%	
Sample Count	12		Contaminants Total	0.6%	

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Figure 47. Contaminants Found in Curbside Green Waste Loads



Lawn chairs



Aerosol cans



Carpet



Electronics



Textiles



Concrete

5. Comparisons to the 1999 Study

This section compares the City's 1999 quantity and composition data to the 2012 quantity and composition data. To keep the figures readable and due to changes in the material list between the two studies, the comparisons are made at the material class level (instead of the material type level). The following differences between the two studies may affect the meaningfulness of these comparisons:

- **Changes to the methodology**—The primary change is in the substream definitions. The current study characterized waste from self-haul vehicles disposing of both refuse and C&D debris. The 1999 study characterized self-haul from only C&D loads and applied that characterization data to both the refuse and C&D tonnage. This change in methodology is partly due to a dramatic decrease in the number of C&D loads arriving at the landfill.
- **Changes to the material lists**—The previous study did not include an **E-Waste** material class; in 1999 all **E-Waste** material types were included in the **Metal** material class. To facilitate comparisons between the studies, **E-Waste** composition data from the current study is added to the **Metals** data.
- **Changes to the treatment of waste from city departments**—The current study includes the city department tonnages and composition data in the overall commercial waste data. The 1999 study examined the city department tonnages and composition data separately. In the comparison figures, the 1999 results have been modified to combine city departments composition with the overall commercial composition.

Changes in Disposal Quantities

The total quantity of waste disposed decreased from nearly 1.7 million tons in 1999 to slightly less than 1.3 million tons in 2012 (see Figure 48). Multifamily is the only substream with an increase in disposal quantities between the two study periods.

Figure 48. Disposal Quantities, 1999 and 2012

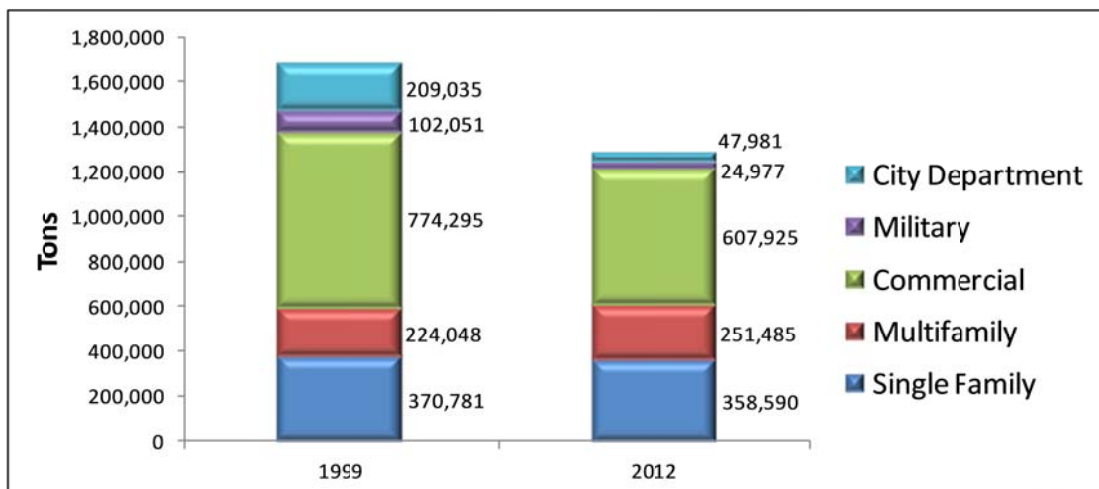


Figure 49 provides the 1999 tonnage proportions while Figure 50 provides the comparable data for this study. In 2012, commercial waste (47%) remains the largest portion of the disposed waste and showed the smallest change from 1999 increasing by one percentage point. The proportion of total disposal in the military and city departments substreams declined dramatically, from a combined 19% in 1999 to 6% in 2012. The proportion of total disposal in the single family and multifamily substreams each grew by approximately six percentage points between the previous study and the current study.

Figure 49. 1999 Waste Stream Proportions

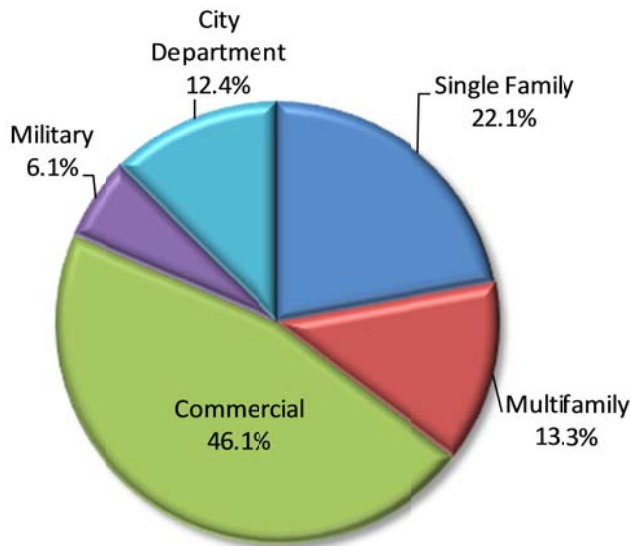
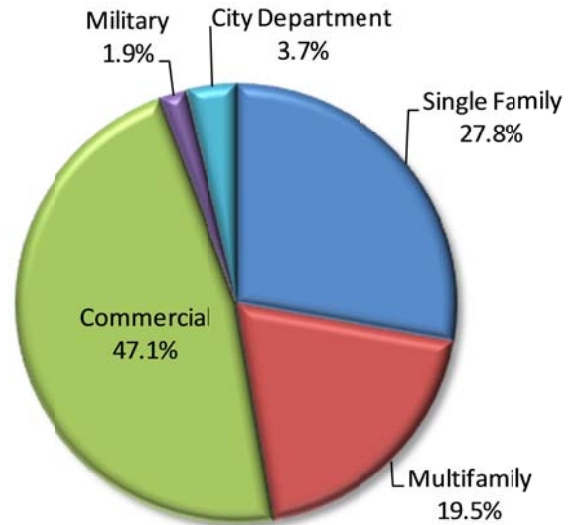


Figure 50. 2012 Waste Stream Proportions

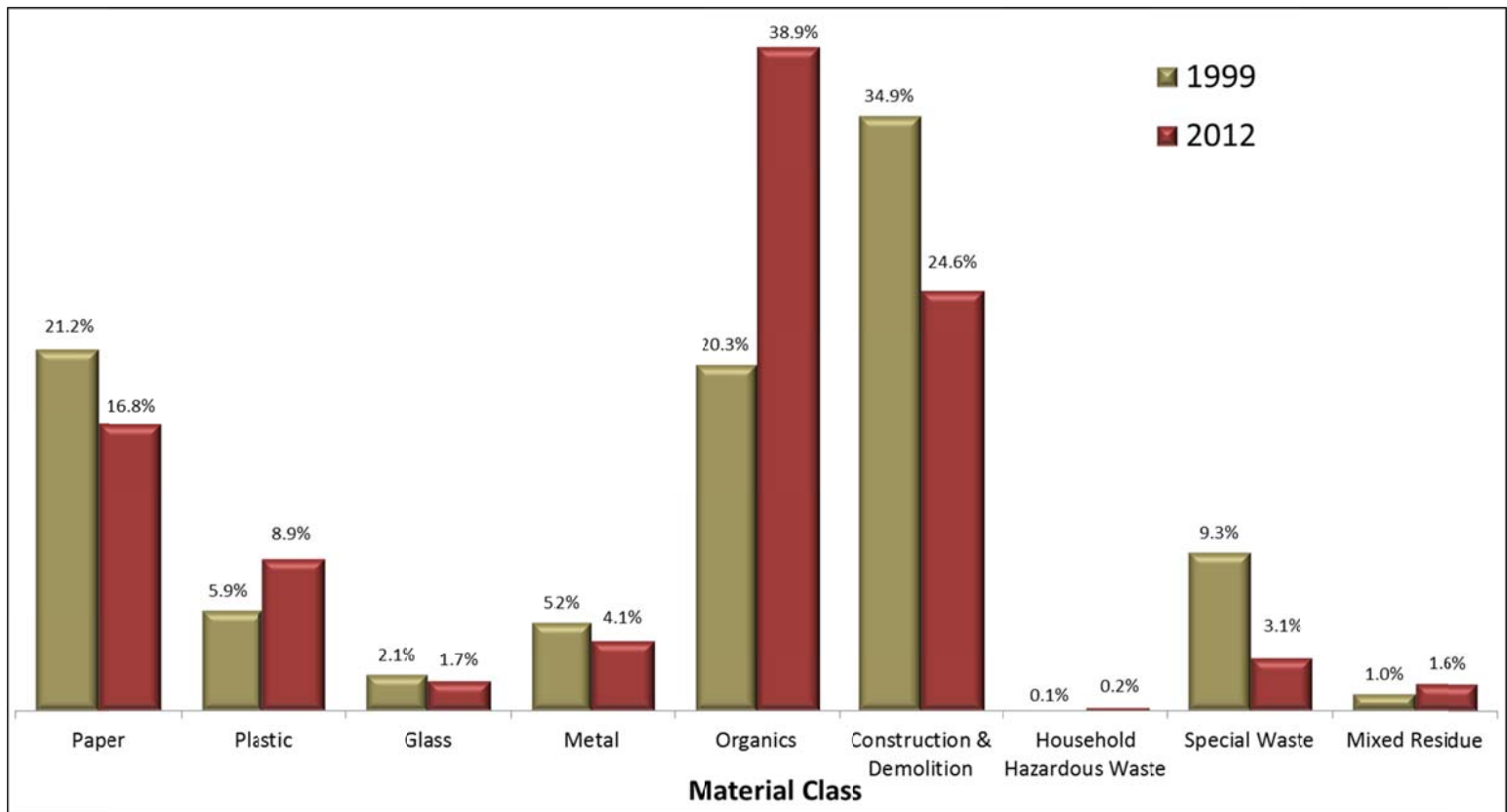


Changes in Composition

Overall Disposed Waste

Compared to 1999, **Organics** are a much larger fraction and **Construction and Demolition** are a much smaller fraction of the overall disposed waste in 2012. The composition by material class for each study is summarized in Figure 51. The increase in the proportion of **Organics** is a trend seen in all four overall disposed waste streams.

Figure 51. Material Class Compositions, Overall Disposed Waste, 1999 and 2012

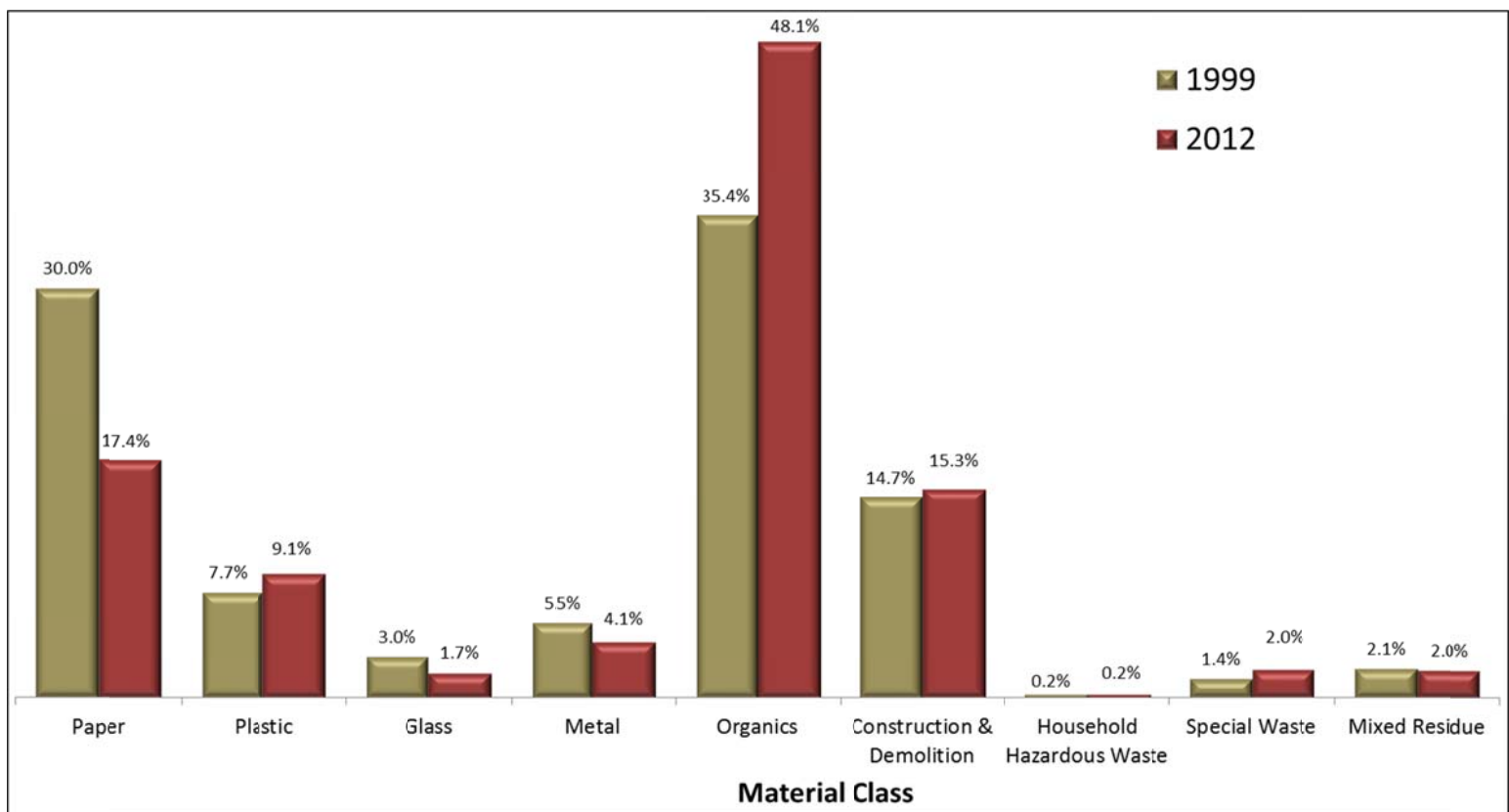


Overall Residential Waste

As shown in Figure 52, between 1999 and 2012 most material classes did not change by more than two percentage points as a proportion of overall residential disposal. The exceptions are **Paper**, which decreased by more than 12 percentage points (from more than 30% to less than 18%), and **Organics**, which increased by more than 12 percentage points (from approximately 35% to approximately 48%). The decrease in **Paper** may be partially due to:

- An increase in recycling throughout the City, and
- An overall decrease in paper waste production with the replacement of newspaper and magazine subscriptions by online media.

Figure 52. Material Class Compositions, Overall Residential Waste, 1999 and 2012

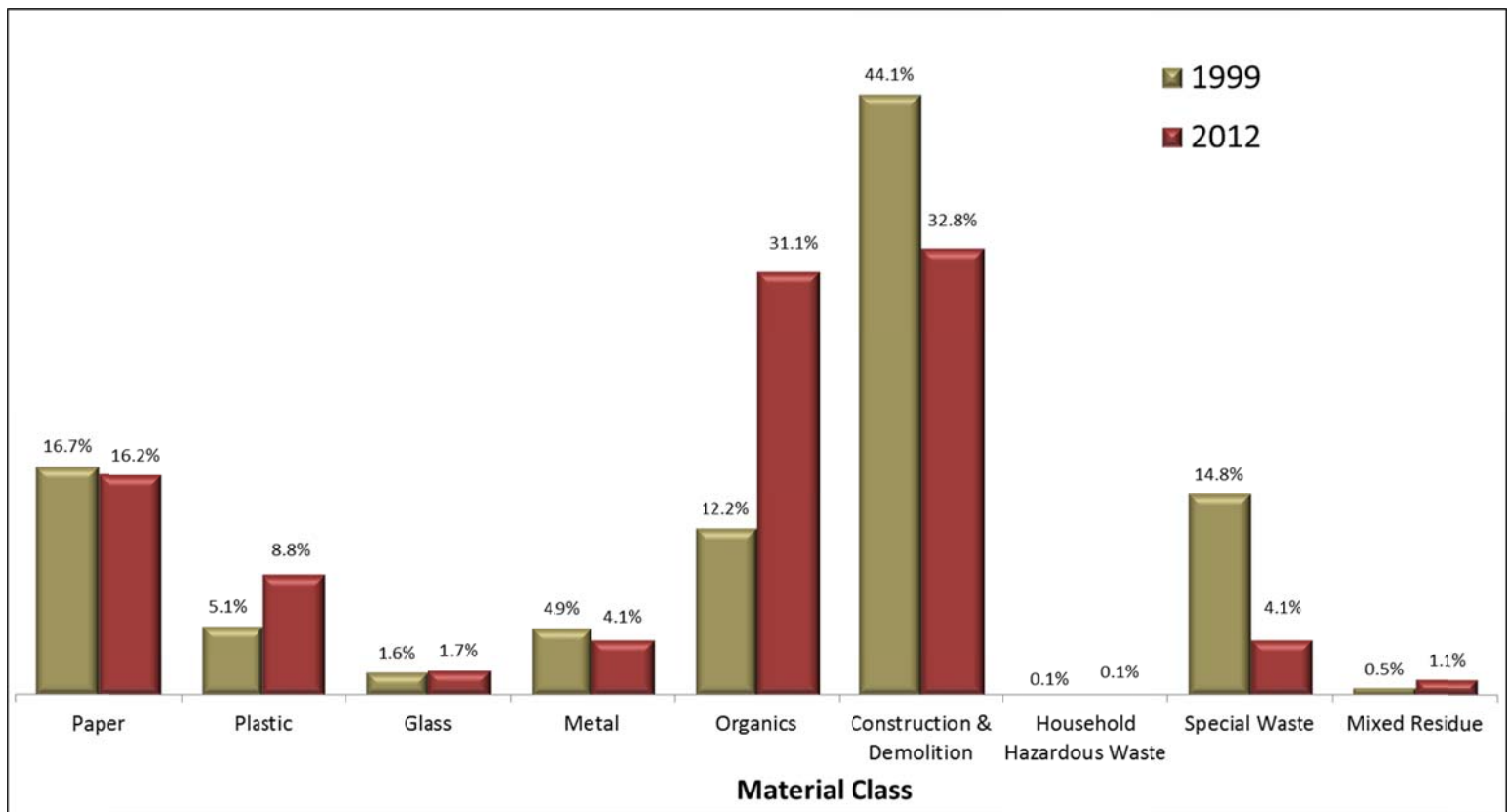


Overall Commercial Waste

The 1999 study characterized city departments waste separate from commercial waste whereas the 2012 combined city departments and commercial waste. For comparison purposes, the 1999 composition data in this section represent the combination of city departments waste and commercial waste.

Construction and Demolition decreased between the two study periods (from 44% to 33%) and the **Organics** material class more than doubled between the two study periods (from 12% to 31%). Most other material classes held steady between the two study periods.

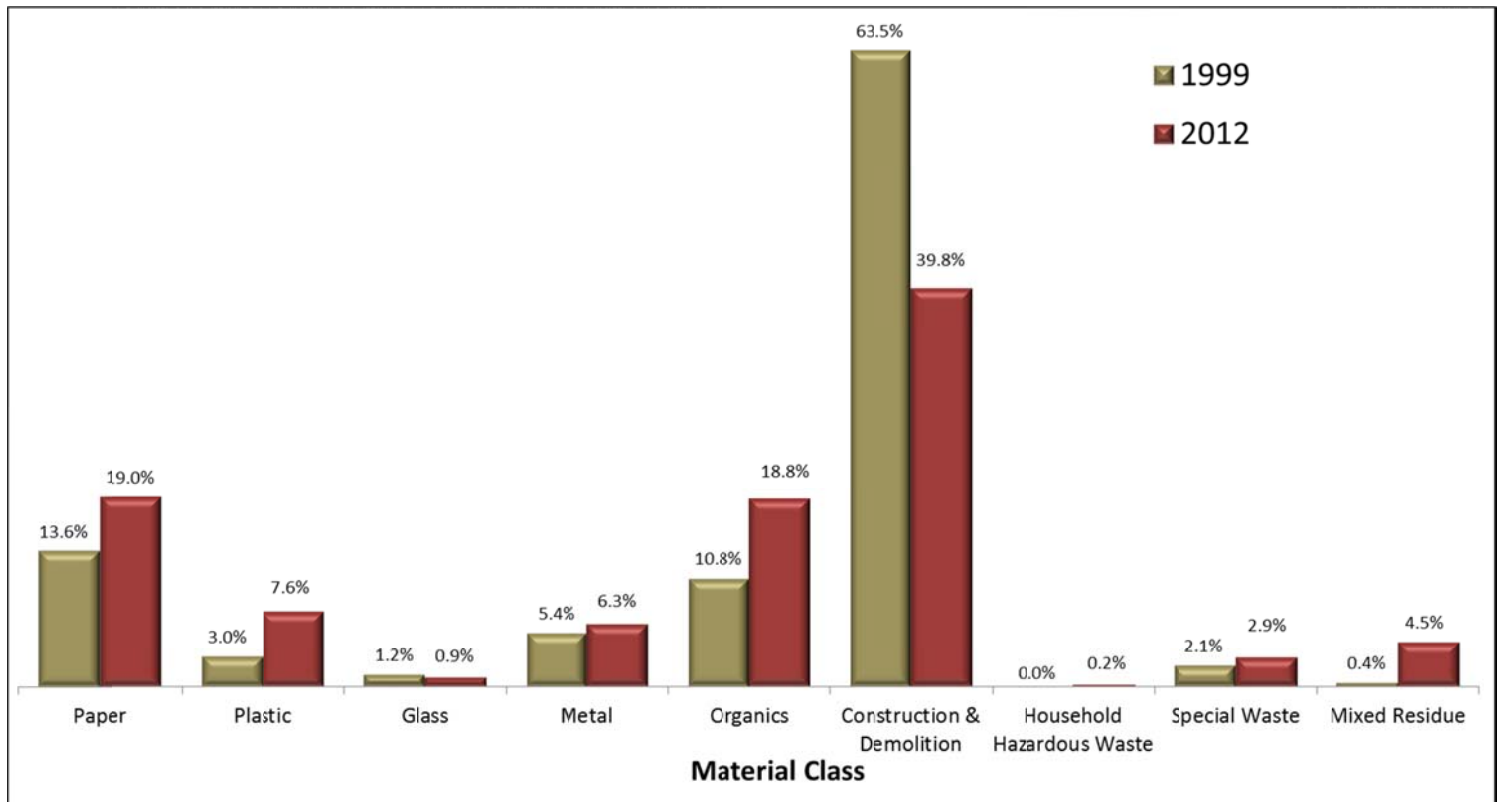
Figure 53. Material Class Compositions, Overall Commercial Waste, 1999 and 2012



Overall Military Waste

Figure 54 summarizes the composition of overall military waste by material class for the 1999 and the 2012 study periods. **Construction and Demolition** is the most prevalent material class in both study periods, though it decreased sharply from 64% in 1999 to 40% in 2012. **Glass** is the only other material class to decrease between the periods, albeit slightly.

Figure 54. Material Class Compositions, Overall Military Waste, 1999 and 2012



Appendix A: Miramar Landfill Self-haul Results

The self-haul composition data in this appendix includes only those non-military self-haul vehicles originating within the San Diego city limits.

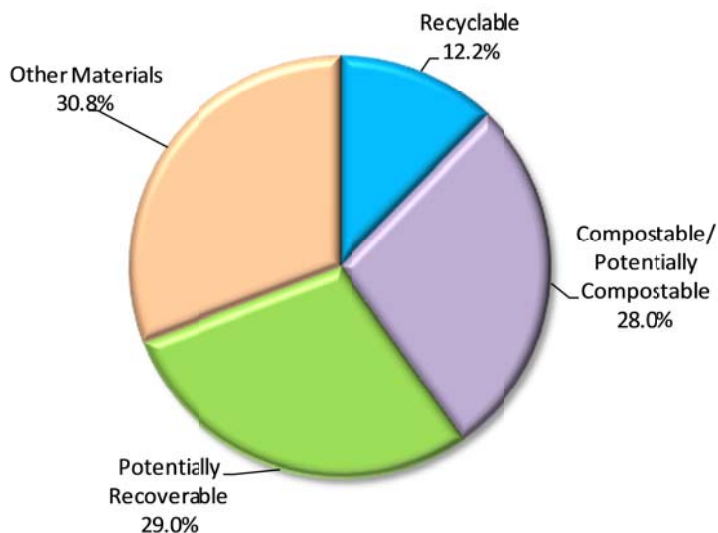
Overall Miramar Landfill Self-haul Substream

This substream's composition is the weighted average of 775 samples from three substreams: 368 flat rate vehicles, 246 small vehicles, and 161 large vehicles. The included substreams within the Miramar Landfill self-haul substream and their associated tonnages are shown in Table 51. These samples were either refuse or C&D materials originating within the San Diego city limits.

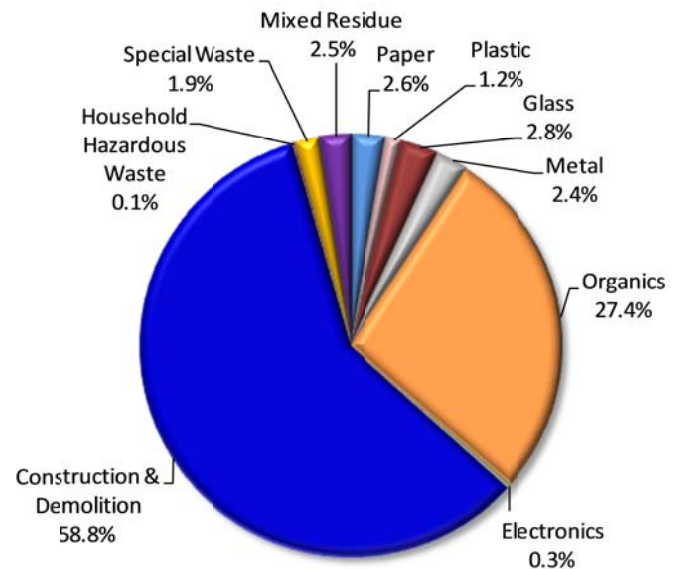
**Table 51. Included Substreams and Tons,
Overall Miramar Landfill Self-haul**

Included Substreams	Tons
Miramar Landfill Residential Self-haul Flat Rate Vehicles	20,855
Miramar Landfill Residential Self-haul Small Vehicles	3,749
Miramar Landfill Residential Self-haul Large Vehicles	1,223
Miramar Landfill Commercial Self-haul Flat Rate Vehicles	24,537
Miramar Landfill Commercial Self-haul Small Vehicles	20,339
Miramar Landfill Commercial Self-haul Large Vehicles	83,732
Total Disposal in Substream	154,435

**Figure 55. Composition by Recoverability Group,
Overall Miramar Landfill Self-haul, 2012**



**Figure 56. Composition by Material Class,
Overall Miramar Landfill Self-haul, 2012**



**Table 52. Ten Most Prevalent Disposed Material Types,
Overall Miramar Landfill Self-haul, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Palm, Succulent, Coral Tree	11.7%	11.7%	18,130
Carpet & Carpet Padding	11.7%	23.4%	18,033
Other Wood Waste	9.4%	32.9%	14,590
Rock, Soil and Fines	7.7%	40.6%	11,959
Remainder/Composite C&D	7.4%	48.0%	11,384
Concrete	6.1%	54.1%	9,433
Leaves and Grass	5.1%	59.2%	7,868
Grass Sod	3.9%	63.1%	6,021
Textiles	2.7%	65.7%	4,115
Prunings and Trimmings	2.6%	68.3%	3,964
Subtotal	68.3%		105,498
All other material types	31.7%		48,937
Total	100.0%		154,435

Figure 57. Seasonal Composition by Material Class, Overall Miramar Landfill Self-haul, 2012

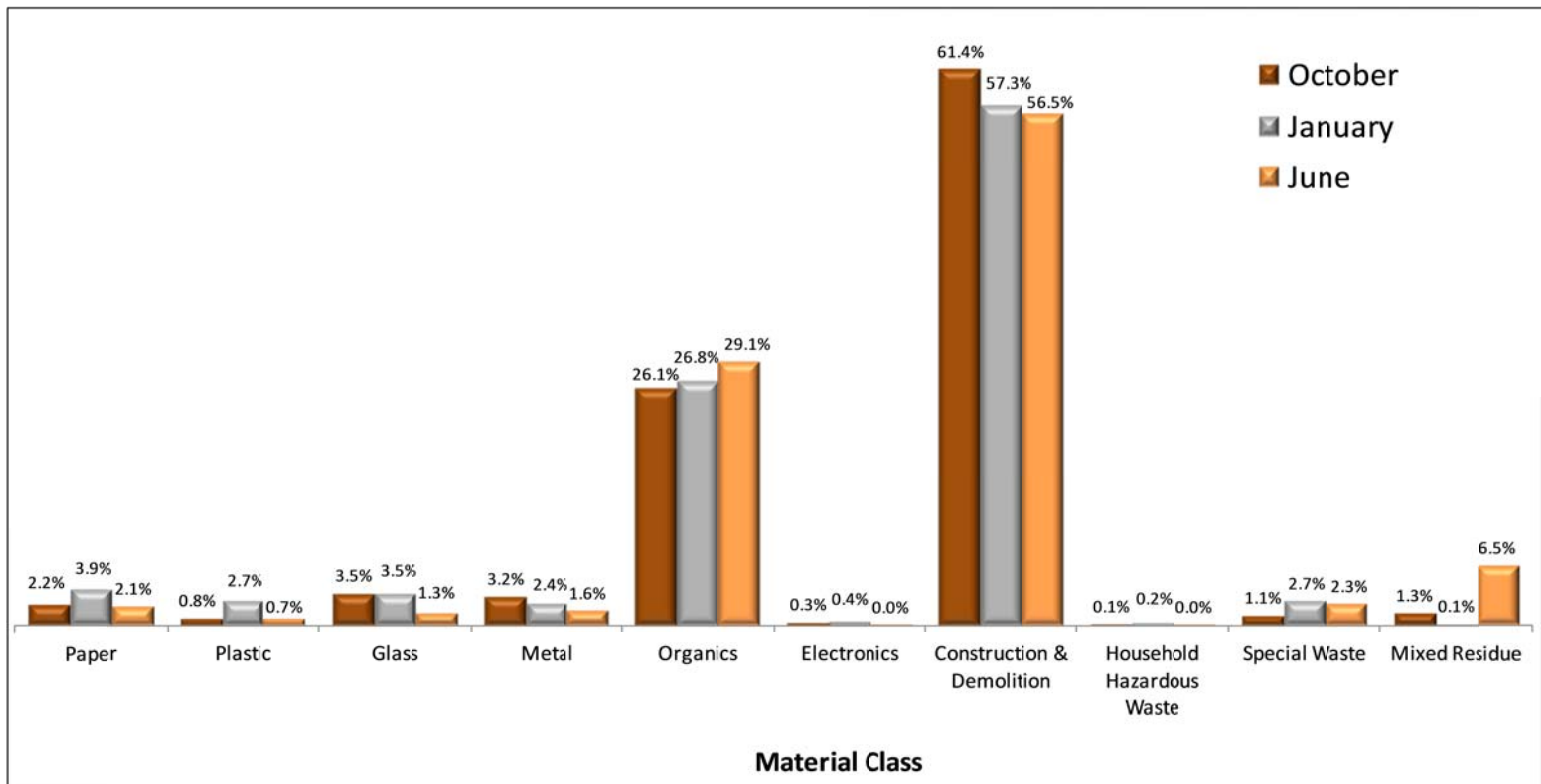


Table 53. Detailed Waste Composition, Overall Miramar Landfill Self-haul, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.6%		4,049	Electronics	0.3%		414
Uncoated Corrugated Cardboard	1.3%	0.7%	2,001	Brown Goods	0.2%	0.1%	281
Waxed Corrugated Cardboard	0.0%	0.0%	1	CRT	0.0%	0.0%	17
Paper Bags	0.0%	0.0%	13	Computer-Related Electronics	0.0%	0.0%	51
Newspaper	0.1%	0.1%	120	Other Consumer Electronics	0.0%	0.0%	59
White Ledger Paper	0.1%	0.0%	88	Video Display Devices (non-CRT devices)	0.0%	0.0%	6
Mixed Waste Paper	0.8%	0.3%	1,235				
Magazines	0.0%	0.0%	76	Construction & Demolition	58.8%		90,743
Phone Books and Directories	0.0%	0.0%	1	Concrete	6.1%	2.9%	9,433
Compostable/Soiled Paper	0.0%	0.0%	50	Asphalt Paving	1.4%	2.1%	2,161
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.1%	0.6%	1,734
Remainder/Composite Paper	0.3%	0.2%	464	Roofing Tar Paper/Felt	1.2%	1.3%	1,879
				Roofing Mastic	0.0%	0.0%	21
Plastic	1.2%		1,929	Built-Up Roofing	1.0%	1.3%	1,531
CRV HDPE Containers	0.0%	0.0%	3	Other Asphalt Roofing Material	0.4%	0.5%	592
Non-CRV HDPE Containers	0.0%	0.0%	35	Clean Dimensional Lumber	2.0%	0.6%	3,096
CRV PETE Containers	0.0%	0.0%	34	Clean Engineered Wood	1.8%	0.6%	2,777
Non-CRV PETE Containers	0.0%	0.0%	5	Clean Pallets and Crates	1.7%	0.8%	2,638
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	9.4%	2.1%	14,590
Miscellaneous Plastic Containers	0.0%	0.0%	50	Clean Gypsum Board	1.0%	0.4%	1,510
Plastic Grocery and Merchandise Bags	0.0%	0.0%	14	Painted/Demolition Gypsum Board	2.3%	0.8%	3,547
Clean Film Plastic	0.5%	0.5%	713	Carpet & Carpet Padding	11.7%	2.5%	18,033
Dirty Film Plastic	0.1%	0.0%	137	Rock, Soil and Fines	7.7%	2.8%	11,959
Durable Plastic Items	0.3%	0.1%	521	Contaminated Soil, Street Sweepings, Drain Cleaning	2.5%	3.7%	3,856
Expanded Polystyrene	0.1%	0.1%	219	Remainder/Composite C&D	7.4%	2.1%	11,384
Remainder/Composite Plastic	0.1%	0.0%	198				
				Household Hazardous Waste	0.1%		175
Glass	2.8%		4,377	Oil-Based Paint	0.0%	0.0%	16
CRV Clear Glass Bottles	0.0%	0.0%	17	Water-Based Paint	0.0%	0.1%	64
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	49	Vehicle and Equipment Fluids	0.0%	0.0%	3
CRV Brown Glass Bottles	0.0%	0.0%	10	Used Oil	0.0%	0.0%	26
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	5
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	3	Sharps	0.0%	0.0%	0
Flat Glass	1.4%	0.6%	2,136	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.4%	0.9%	2,161	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	57
				Remainder/Composite Household Hazardous	0.0%	0.0%	3
Metal	2.4%		3,748				
Tin/Steel Cans	0.1%	0.0%	116	Special Waste	1.9%		2,892
Major Appliances	0.1%	0.1%	79	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.1%	0.3%	1,642	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	20	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	8	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.8%	0.4%	2,783
Other Non-Ferrous Metal	1.0%	0.5%	1,544	Tire	0.1%	0.1%	92
Remainder/Composite Metal	0.2%	0.1%	339	Remainder/Composite Special Waste	0.0%	0.0%	17
Organics	27.4%		42,268	Mixed Residue	2.5%		3,841
Food	0.0%	0.0%	29	Mixed Residue	2.5%	1.0%	3,841
Palm, Succulent, Coral Tree	11.7%	4.7%	18,130				
Leaves and Grass	5.1%	1.3%	7,868	Total	100.0%		154,435
Prunings and Trimmings	2.6%	0.7%	3,964	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.8%	0.4%	1,292	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	24				
Grass Sod	3.9%	3.4%	6,021	Total Including Residuals			154,435
Manures	0.1%	0.1%	132				
Diapers	0.0%	0.0%	6	Sample Count			775
Textiles	2.7%	0.8%	4,115				
Remainder/Composite Organics	0.4%	0.2%	688				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Miramar Landfill Self-haul Flat Rate Vehicles Substream

The field crew visually characterized 368 Miramar Landfill self-haul flat rate vehicle samples. The substreams within the Miramar Landfill flat-rate vehicle substream and their associated tonnages are shown in Table 54. These samples were either refuse or C&D materials originating within the San Diego city limits.

Table 54. Included Substreams and Tons, Miramar Landfill Self-haul Flat Rate Vehicles

Included Substreams	Tons
Miramar Landfill Residential Self-haul Flat Rate Vehicles	20,855
Miramar Landfill Commercial Self-haul Flat Rate Vehicles	24,537
Total Disposal in Substream	45,392

Figure 58. Composition by Recoverability Group, Miramar Landfill Self-haul Flat Rate Vehicles, 2012

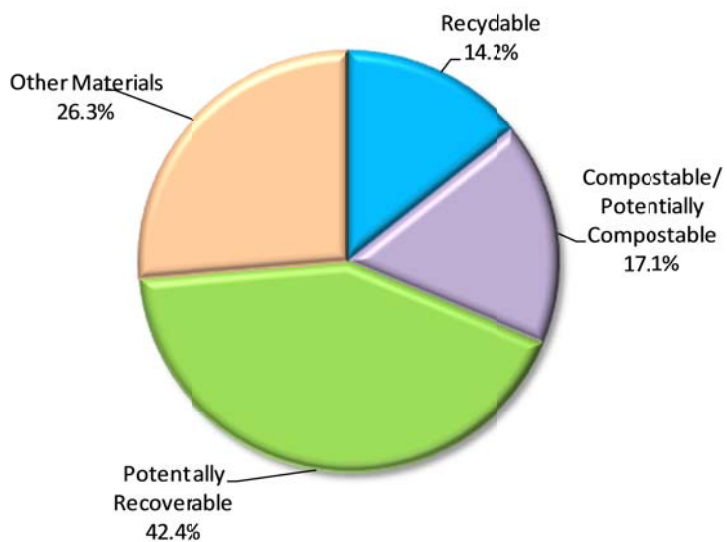
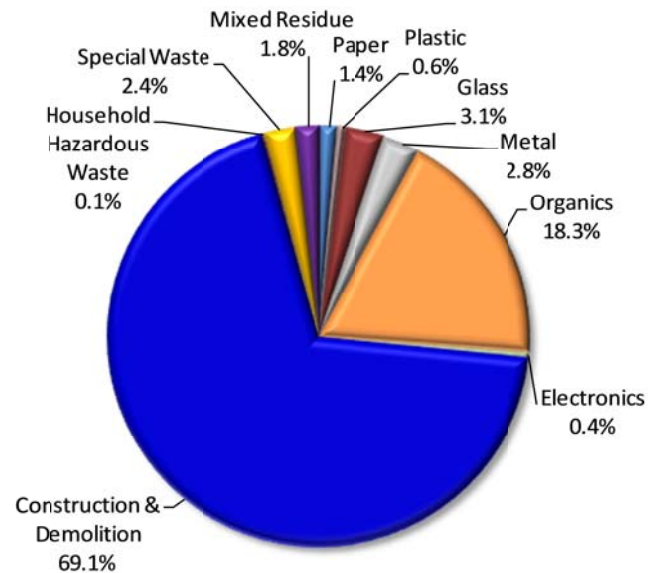


Figure 59. Composition by Material Class, Miramar Landfill Self-haul Flat Rate Vehicles, 2012



**Table 55. Ten Most Prevalent Disposed Material Types,
Miramar Landfill Self-haul Flat Rate Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	23.9%	23.9%	10,847
Concrete	9.9%	33.8%	4,504
Other Wood Waste	9.4%	43.2%	4,278
Rock, Soil and Fines	8.4%	51.7%	3,823
Remainder/Composite C&D	7.9%	59.6%	3,589
Palm, Succulent, Coral Tree	5.9%	65.4%	2,658
Leaves and Grass	4.8%	70.2%	2,163
Textiles	3.0%	73.2%	1,371
Prunings and Trimmings	2.3%	75.5%	1,060
Bulky Items	2.2%	77.8%	1,006
Subtotal	77.8%		35,298
All other material types	22.2%		10,094
Total	100.0%		45,392

Table 56. Detailed Waste Composition, Miramar Landfill Self-haul Flat Rate Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.4%		630	Electronics	0.4%		199
Uncoated Corrugated Cardboard	0.6%	0.2%	287	Brown Goods	0.4%	0.3%	164
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	5	Computer-Related Electronics	0.0%	0.0%	13
Newspaper	0.1%	0.1%	37	Other Consumer Electronics	0.0%	0.1%	21
White Ledger Paper	0.1%	0.1%	36	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.4%	0.2%	195				
Magazines	0.0%	0.0%	7	Construction & Demolition	69.1%		31,383
Phone Books and Directories	0.0%	0.0%	0	Concrete	9.9%	4.5%	4,504
Compostable/Soiled Paper	0.0%	0.0%	6	Asphalt Paving	0.2%	0.4%	104
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.5%	0.4%	245
Remainder/Composite Paper	0.1%	0.1%	57	Roofing Tar Paper/Felt	0.4%	0.2%	170
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.6%		268	Built-Up Roofing	0.6%	1.0%	282
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	3	Clean Dimensional Lumber	2.0%	1.1%	919
CRV PETE Containers	0.0%	0.0%	6	Clean Engineered Wood	1.7%	0.8%	757
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	0.5%	0.2%	205
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	9.4%	3.6%	4,278
Miscellaneous Plastic Containers	0.0%	0.0%	8	Clean Gypsum Board	1.6%	1.2%	710
Plastic Grocery and Merchandise Bags	0.0%	0.0%	2	Painted/Demolition Gypsum Board	2.1%	0.9%	951
Clean Film Plastic	0.1%	0.0%	33	Carpet & Carpet Padding	23.9%	6.0%	10,847
Dirty Film Plastic	0.0%	0.0%	15	Rock, Soil and Fines	8.4%	2.5%	3,823
Durable Plastic Items	0.3%	0.1%	127	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	18	Remainder/Composite C&D	7.9%	2.5%	3,589
Remainder/Composite Plastic	0.1%	0.0%	55				
				Household Hazardous Waste	0.1%		57
Glass	3.1%		1,385	Oil-Based Paint	0.0%	0.1%	16
CRV Clear Glass Bottles	0.0%	0.0%	6	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	4	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	2	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	1
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	1.5%	0.9%	662	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.6%	0.7%	712	CFL, Fluorescent Tube and Other Mercury-Containing	0.1%	0.1%	40
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	2.8%		1,276				
Tin/Steel Cans	0.1%	0.1%	31	Special Waste	2.4%		1,095
Major Appliances	0.0%	0.0%	16	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.4%	0.5%	648	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	2	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.2%	0.8%	1,006
Other Non-Ferrous Metal	1.1%	0.7%	521	Tire	0.2%	0.2%	71
Remainder/Composite Metal	0.1%	0.1%	57	Remainder/Composite Special Waste	0.0%	0.1%	17
Organics	18.3%		8,299	Mixed Residue	1.8%		801
Food	0.0%	0.0%	8	Mixed Residue	1.8%	0.8%	801
Palm, Succulent, Coral Tree	5.9%	1.6%	2,658				
Leaves and Grass	4.8%	1.5%	2,163	Total	100.0%		45,392
Prunings and Trimmings	2.3%	1.0%	1,060	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.4%	0.2%	187	C&D Processing Residuals			0
Agricultural Crop Residues	0.1%	0.1%	24				
Grass Sod	1.2%	0.7%	550	Total Including Residuals			45,392
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	0	Sample Count			368
Textiles	3.0%	1.2%	1,371				
Remainder/Composite Organics	0.6%	0.4%	281				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Miramar Landfill Self-haul Small Vehicles Substream

The 246 small vehicles in this substream all originated within the San Diego city limits and disposed of either refuse or C&D materials. The secondary substreams within the Miramar Landfill self-haul small vehicles substream and their associated tonnages are shown in Table 57.

Table 57. Included Substreams and Tons, Miramar Landfill Self-haul Small Vehicles

Included Substreams	Tons
Miramar Landfill Residential Self-haul Small Vehicles	3,749
Miramar Landfill Commercial Self-haul Small Vehicles	20,339
Total Disposal in Substream	24,088

Figure 60. Composition by Recoverability Group, Miramar Landfill Self-haul Small Vehicles, 2012

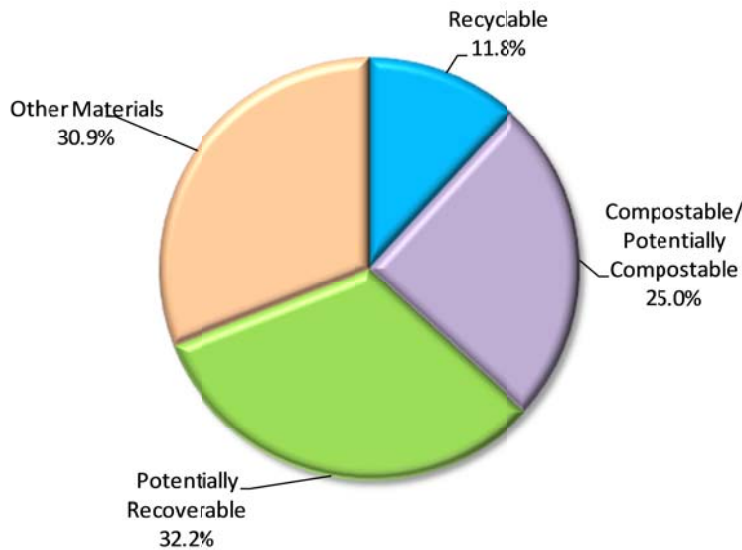
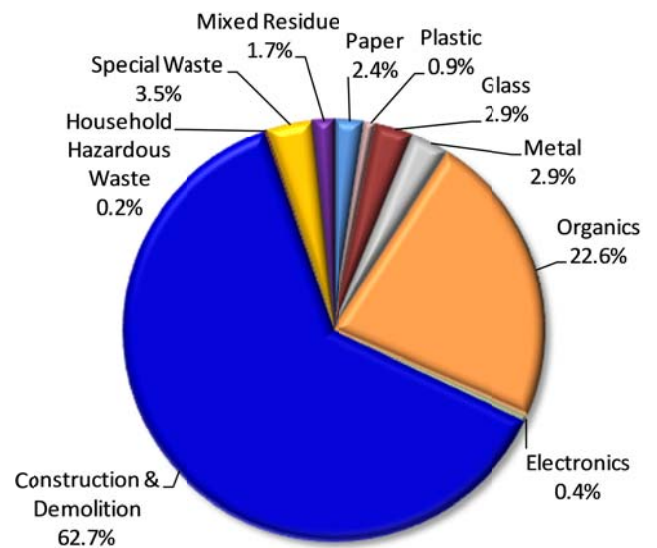


Figure 61. Composition by Material Class, Miramar Landfill Self-haul Small Vehicles, 2012



**Table 58. Ten Most Prevalent Disposed Material Types,
Miramar Landfill Self-haul Small Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	14.8%	14.8%	3,572
Other Wood Waste	12.7%	27.6%	3,065
Palm, Succulent, Coral Tree	9.9%	37.5%	2,396
Remainder/Composite C&D	8.7%	46.2%	2,105
Concrete	7.0%	53.2%	1,685
Rock, Soil and Fines	5.1%	58.3%	1,224
Leaves and Grass	4.8%	63.1%	1,156
Bulky Items	3.5%	66.6%	831
Clean Dimensional Lumber	3.3%	69.9%	798
Prunings and Trimmings	3.3%	73.2%	789
Subtotal	73.2%		17,622
All other material types	26.8%		6,466
Total	100.0%		24,088

Table 59. Detailed Waste Composition, Miramar Landfill Self-haul Small Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.4%		572	Electronics	0.4%		108
Uncoated Corrugated Cardboard	1.1%	0.5%	257	Brown Goods	0.3%	0.3%	69
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	4
Paper Bags	0.0%	0.0%	2	Computer-Related Electronics	0.1%	0.1%	21
Newspaper	0.0%	0.0%	5	Other Consumer Electronics	0.1%	0.0%	13
White Ledger Paper	0.0%	0.0%	3	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.8%	0.4%	204				
Magazines	0.1%	0.1%	26	Construction & Demolition	62.7%		15,091
Phone Books and Directories	0.0%	0.0%	0	Concrete	7.0%	2.3%	1,685
Compostable/Soiled Paper	0.0%	0.0%	6	Asphalt Paving	0.2%	0.4%	58
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	2.0%	2.6%	488
Remainder/Composite Paper	0.3%	0.1%	68	Roofing Tar Paper/Felt	0.1%	0.1%	31
				Roofing Mastic	0.0%	0.0%	7
Plastic	0.9%		207	Built-Up Roofing	0.0%	0.0%	5
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.5%	0.6%	125
Non-CRV HDPE Containers	0.0%	0.0%	7	Clean Dimensional Lumber	3.3%	1.8%	798
CRV PETE Containers	0.0%	0.0%	9	Clean Engineered Wood	2.2%	1.0%	538
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	2.2%	1.9%	532
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	12.7%	3.2%	3,065
Miscellaneous Plastic Containers	0.1%	0.1%	21	Clean Gypsum Board	0.9%	0.5%	227
Plastic Grocery and Merchandise Bags	0.0%	0.0%	1	Painted/Demolition Gypsum Board	2.6%	1.1%	630
Clean Film Plastic	0.1%	0.0%	19	Carpet & Carpet Padding	14.8%	9.0%	3,572
Dirty Film Plastic	0.0%	0.0%	8	Rock, Soil and Fines	5.1%	3.1%	1,224
Durable Plastic Items	0.3%	0.1%	83	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	10	Remainder/Composite C&D	8.7%	2.4%	2,105
Remainder/Composite Plastic	0.2%	0.1%	46				
				Household Hazardous Waste	0.2%		37
Glass	2.9%		698	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	4	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	3	Vehicle and Equipment Fluids	0.0%	0.0%	3
CRV Brown Glass Bottles	0.0%	0.0%	9	Used Oil	0.1%	0.1%	15
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	5
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	3	Sharps	0.0%	0.0%	0
Flat Glass	2.1%	0.9%	507	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.7%	0.3%	171	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	11
				Remainder/Composite Household Hazardous	0.0%	0.0%	2
Metal	2.9%		691				
Tin/Steel Cans	0.1%	0.1%	23	Special Waste	3.5%		843
Major Appliances	0.2%	0.3%	46	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.2%	0.4%	289	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	7	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	8	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	3.5%	1.5%	831
Other Non-Ferrous Metal	0.7%	0.3%	176	Tire	0.0%	0.0%	12
Remainder/Composite Metal	0.6%	0.6%	143	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	22.6%		5,440	Mixed Residue	1.7%		400
Food	0.0%	0.0%	5	Mixed Residue	1.7%	0.7%	400
Palm, Succulent, Coral Tree	9.9%	3.0%	2,396				
Leaves and Grass	4.8%	1.7%	1,156	Total	100.0%		24,088
Prunings and Trimmings	3.3%	1.3%	789	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.9%	0.5%	225	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.3%	0.3%	77	Total Including Residuals			24,088
Manures	0.2%	0.3%	37				
Diapers	0.0%	0.0%	6	Sample Count			246
Textiles	2.6%	1.1%	625				
Remainder/Composite Organics	0.5%	0.3%	125				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Miramar Landfill Self-haul Large Vehicles Substream

This substream's composition is based on 161 self-haul large vehicle samples. The included substreams and their associated tonnages are shown in Table 60. These samples were either refuse or C&D materials originating within the San Diego city limits.

Table 60. Included Substreams and Tons, Miramar Landfill Self-haul Large Vehicles

Included Substreams	Tons
Miramar Landfill Residential Self-haul Large Vehicles	1,223
Miramar Landfill Commercial Self-haul Large Vehicles	83,732
Total Disposal in Substream	84,955

Figure 62. Composition by Recoverability Group, Miramar Landfill Self-haul Large Vehicles, 2012

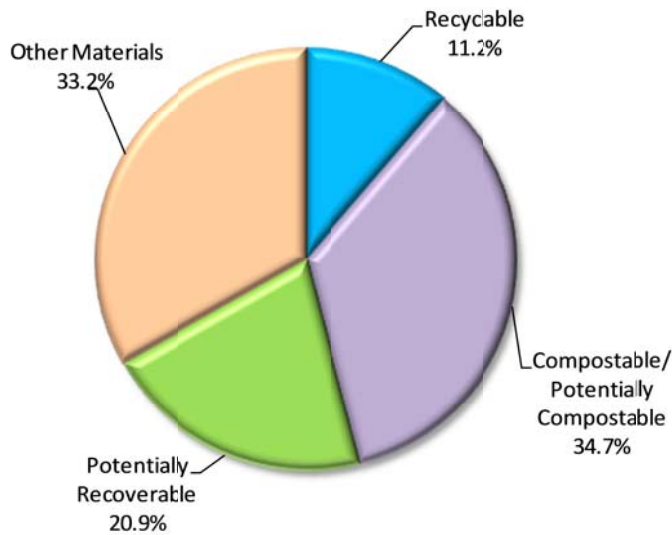
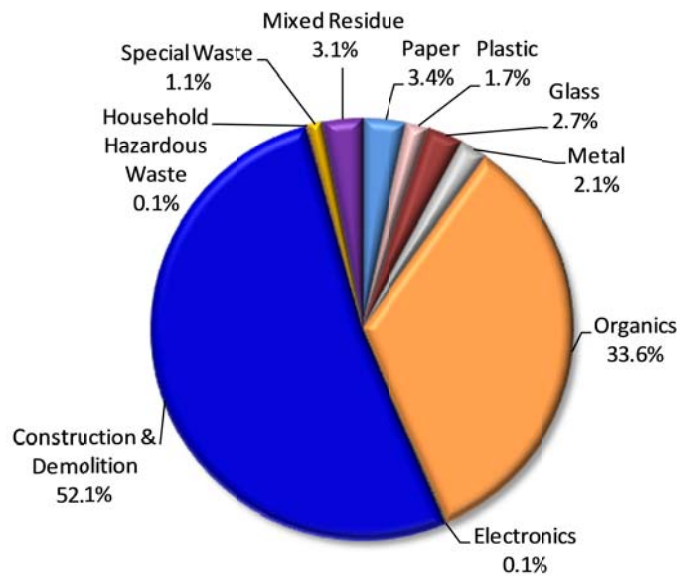


Figure 63. Composition by Material Class, Miramar Landfill Self-haul Large Vehicles, 2012



**Table 61. Ten Most Prevalent Disposed Material Types,
Miramar Landfill Self-haul Large Vehicles, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Palm, Succulent, Coral Tree	15.4%	15.4%	13,076
Other Wood Waste	8.5%	23.9%	7,247
Rock, Soil and Fines	8.1%	32.1%	6,913
Remainder/Composite C&D	6.7%	38.8%	5,690
Grass Sod	6.3%	45.1%	5,394
Leaves and Grass	5.4%	50.5%	4,550
Contaminated Soil, Street Sweepings, Drain Cleaning	4.5%	55.0%	3,856
Carpet & Carpet Padding	4.3%	59.3%	3,614
Concrete	3.8%	63.1%	3,244
Mixed Residue	3.1%	66.2%	2,640
Subtotal	66.2%		56,223
All other material types	33.8%		28,732
Total	100.0%		84,955

Table 62. Detailed Waste Composition, Miramar Landfill Self-haul Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	3.4%		2,846	Electronics	0.1%		107
Uncoated Corrugated Cardboard	1.7%	1.2%	1,457	Brown Goods	0.1%	0.1%	47
Waxed Corrugated Cardboard	0.0%	0.0%	1	CRT	0.0%	0.0%	12
Paper Bags	0.0%	0.0%	5	Computer-Related Electronics	0.0%	0.0%	17
Newspaper	0.1%	0.1%	77	Other Consumer Electronics	0.0%	0.0%	24
White Ledger Paper	0.1%	0.1%	49	Video Display Devices (non-CRT devices)	0.0%	0.0%	6
Mixed Waste Paper	1.0%	0.6%	836				
Magazines	0.1%	0.1%	43	Construction & Demolition	52.1%		44,268
Phone Books and Directories	0.0%	0.0%	1	Concrete	3.8%	4.6%	3,244
Compostable/Soiled Paper	0.0%	0.0%	38	Asphalt Paving	2.4%	3.7%	1,999
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.2%	0.9%	1,001
Remainder/Composite Paper	0.4%	0.4%	339	Roofing Tar Paper/Felt	2.0%	2.4%	1,678
				Roofing Mastic	0.0%	0.0%	14
Plastic	1.7%		1,455	Built-Up Roofing	1.5%	2.4%	1,244
CRV HDPE Containers	0.0%	0.0%	2	Other Asphalt Roofing Material	0.5%	0.9%	467
Non-CRV HDPE Containers	0.0%	0.0%	24	Clean Dimensional Lumber	1.6%	0.8%	1,379
CRV PETE Containers	0.0%	0.0%	18	Clean Engineered Wood	1.7%	0.9%	1,481
Non-CRV PETE Containers	0.0%	0.0%	3	Clean Pallets and Crates	2.2%	1.4%	1,901
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	8.5%	3.3%	7,247
Miscellaneous Plastic Containers	0.0%	0.0%	21	Clean Gypsum Board	0.7%	0.5%	573
Plastic Grocery and Merchandise Bags	0.0%	0.0%	11	Painted/Demolition Gypsum Board	2.3%	1.4%	1,967
Clean Film Plastic	0.8%	0.8%	661	Carpet & Carpet Padding	4.3%	1.8%	3,614
Dirty Film Plastic	0.1%	0.1%	115	Rock, Soil and Fines	8.1%	4.8%	6,913
Durable Plastic Items	0.4%	0.2%	311	Contaminated Soil, Street Sweepings, Drain Cleaning	4.5%	6.7%	3,856
Expanded Polystyrene	0.2%	0.2%	191	Remainder/Composite C&D	6.7%	3.4%	5,690
Remainder/Composite Plastic	0.1%	0.1%	98				
				Household Hazardous Waste	0.1%		81
Glass	2.7%		2,294	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	7	Water-Based Paint	0.1%	0.1%	64
Non-CRV Clear Glass Bottles and Containers	0.0%	0.1%	42	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	11
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	1.1%	0.9%	968	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.5%	1.6%	1,278	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	6
				Remainder/Composite Household Hazardous	0.0%	0.0%	1
Metal	2.1%		1,781				
Tin/Steel Cans	0.1%	0.1%	62	Special Waste	1.1%		954
Major Appliances	0.0%	0.0%	17	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.8%	0.5%	705	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	11	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.1%	0.4%	945
Other Non-Ferrous Metal	1.0%	0.7%	847	Tire	0.0%	0.0%	9
Remainder/Composite Metal	0.2%	0.1%	139	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	33.6%		28,529	Mixed Residue	3.1%		2,640
Food	0.0%	0.0%	17	Mixed Residue	3.1%	1.7%	2,640
Palm, Succulent, Coral Tree	15.4%	8.5%	13,076				
Leaves and Grass	5.4%	2.2%	4,550	Total	100.0%		84,955
Prunings and Trimmings	2.5%	1.0%	2,116				
Branches and Stumps	1.0%	0.8%	880	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	6.3%	6.2%	5,394				
Manures	0.1%	0.2%	95	Total Including Residuals			84,955
Diapers	0.0%	0.0%	0				
Textiles	2.5%	1.3%	2,119	Sample Count			161
Remainder/Composite Organics	0.3%	0.4%	282				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Appendix B: Material Type Definitions

Disposed Samples Material Definitions

Paper

1. **Uncoated Corrugated Cardboard** usually has three layers. The center wavy layer is sandwiched between the two outer layers. It does not have any wax coating on the inside or outside.
2. **Waxed Corrugated Cardboard** usually has three layers. The center wavy layer is sandwiched between the two outer layers. Examples include some water-resistant cardboard containers, such as shipping and moving boxes, as well as boxes designed to contain produce or other perishable goods.
3. **Paper Bags** means bags and sheets made from kraft paper. The paper may be brown (unbleached) or white (bleached). Examples include paper grocery bags, fast food bags, department store bags, and heavyweight sheets of kraft packing paper.
4. **Newspaper** means paper used in newspapers. Examples include newspaper and glossy inserts found in newspapers, and all items made from newsprint, such as free advertising guides, election guides, and tax instruction booklets.
5. **White Ledger Paper** means uncolored bond, rag, or stationary grade paper. It may have colored ink on it. When the paper is torn, the fibers are white. Examples include white photocopy, white laser print, and letter paper.
6. **Mixed Waste Paper** means paper products or packaging made mostly of paper combined with minor amounts of other materials such as wax or glues. This type includes colored ledger, manila folders, manila envelopes, index cards, white envelopes, white window envelopes, notebook paper, carbonless forms, junk mail, and box board packages such as cereal boxes. Note: This type was defined as Other Miscellaneous Paper in the 1999-2000 Study.
7. **Magazines** means items made of glossy coated paper. This paper is usually slick, smooth to the touch, and reflects light. Examples include glossy magazines, catalogs, brochures, and pamphlets.
8. **Phone Books and Directories** means thin paper between coated covers. These items are bound along the spine with glue. Examples include whole or damaged telephone books, “yellow pages”, real estate listings, and some non-glossy mail order catalogs.
9. **Compostable/Soiled paper** means paper packaging or products labeled “compostable” or “biodegradable” or any food-soiled paper. Examples include food-soiled pizza boxes, food-soiled paper plates and cups, food-soiled paper containers (such as fast food), napkins, coffee filters, shredded paper, and paper towels. Note: This type was defined as Remainder/Composite Paper in the 1999-2000 Study.
10. **Aseptic/milk containers** means bleached polycoated paperboard containers or paper containers with a foil liner of various sizes and shapes that contained milk, ice cream, or other liquids. Note: This type was defined as Remainder/Composite Paper in the 1999-2000 Study.
11. **Remainder/Composite Paper** means paper that cannot be put into any other type. This type includes remaining contaminated, non-compostable/non-biodegradable items and items made mostly of paper but combined with large amounts of other materials such as wax, plastic, paint,

glues, and foil. Examples include blueprints, sepia, carbon paper, non-compostable cups and plates, and photographs.

Glass

12. **CRV Clear Bottles** means clear glass bottles with a CRV label.
13. **Non-CRV Clear Bottles and Containers** means clear glass beverage and food containers without a CRV label.
14. **CRV Brown Bottles** means brown glass bottles with a CRV label.
15. **Non-CRV Brown Bottles and Containers** means brown glass beverage and food containers without a CRV label.
16. **CRV Other Colored Bottles** means colored glass containers and bottles with a CRV label.
17. **Non-CRV & Other Colored Bottles and Containers** means colored glass containers and bottles without a CRV label.
18. **Flat Glass** means clear or tinted glass that is flat. Examples include glass window panes, doors and table tops, flat automotive window glass (side windows), safety glass, and architectural glass. This type does not include windshields, laminated glass, or any curved glass.
19. **Remainder/Composite Glass** means glass that cannot be put in any other type. It includes items made mostly of glass but combined with other materials. Examples include Pyrex, Corningware, crystal and other glass tableware, mirrors, and auto windshields, or any curved glass

Metal

20. **Tin/Steel Cans** means rigid containers made mainly of steel. These items will stick to a magnet and may be tin-coated. This type does *not* include CRV tin cans. Examples include canned food and beverage containers, empty metal paint cans, empty spray paint and other aerosol containers, and bimetal containers with steel sides and aluminum ends. Note: Aerosols and other containers that still contain product are sorted according to that that material – for instance, water-based paint.
21. **Major Appliances** means discarded major appliances of any color. These items are often enamel-coated. Examples include washing machines, hot water heaters, stoves, and refrigerators. This type does not include electronics, such as televisions and stereos.
22. **Other Ferrous Metal** means any iron or steel that is magnetic or any stainless steel item. This type includes items comprised of 80% or greater by weight of other ferrous metal. Examples include structural steel beams, metal clothes hangers, stainless steel cookware, security bars, and scrap ferrous items.
23. **CRV Aluminum & Tin Cans** means any food or beverage container made mainly of aluminum or tin with a CRV label. Examples include aluminum soda or beer cans and a few tin beer cans (Sapporo beer).
24. **Non-CRV Aluminum Cans** means any food or beverage container, made mainly of aluminum, without a CRV label.
25. **Used Oil Filters** means metal oil filters used in motor vehicles and other engines, which contain a residue of used oil. Note: This type was defined as Used Oil in the 1999-2000 Study.

- 26. **Other Non-Ferrous Metal** means any metal item that is not stainless steel or magnetic that is not listed above. This type includes items comprised of 80% or greater by weight of other non-ferrous metal. These items may be made of aluminum, copper, brass, bronze, lead, zinc, or other metals. Examples include aluminum window frames, aluminum siding, copper wire, shell casings, brass pipe, and aluminum foil.
- 27. **Remainder/Composite Metal** means metal that cannot be put in any other type. This type includes metals composed of 20% or more by weight of other materials and items composed of both ferrous metals and non-ferrous metal.

Plastic

- 28. **CRV HDPE Containers** means natural and colored HDPE containers such as bottles, jars, with a CRV label. This plastic is usually either cloudy white, allowing light to pass through it (natural) or a solid color, preventing light from passing through it (colored). When marked for identification, it bears the number "2" in the triangular recycling symbol.
- 29. **Non-CRV HDPE Containers** means natural and colored HDPE containers such as bottles, jars, tubs, cups, and clamshells without a CRV label. This category includes HDPE buckets designed to hold 5 gallons or less of material (with or without metal handles).
- 30. **CRV PETE Containers** means clear or colored PETE containers such as bottles, jars, with a CRV label. When marked for identification, it bears the number "1" in the center of the triangular recycling symbol and may also bear the letters "PETE" or "PET". The color is usually transparent green or clear. A PETE container usually has a small dot left from the manufacturing process, not a seam. It does not turn white when bent.
- 31. **Non-CRV PETE Containers** means clear or colored PETE containers such as bottles, jars, tubs, cups, and clamshells without a CRV label.
- 32. **Compostable/Biodegradable Containers** means plastic containers such as bottles, jars, tubs, cups, and clamshells labeled "compostable" or "biodegradable". Examples include food packaging and service ware items such as clamshells, cups, plates, PLA water bottles, and bowls that are so marked.
- 33. **Miscellaneous Plastic Containers** means plastic containers, including cups, made of types of plastic other than HDPE, PETE, or compostable/biodegradable resins. Items may be made of PVC, PP, or PS. When marked for identification, these items may bear the number "3", "4", "5", "6", or "7" in the triangular recycling symbol. This category includes #3-#7 buckets designed to hold 5 gallons or less of material with or without metal handles.
- 34. **Plastic Grocery and Merchandise Bags** means plastic shopping bags used to contain merchandise to transport from the place of purchase, given out by the store with the purchase. This type includes dry cleaning bags intended for one-time use. Note: This type was defined as Film Plastic in the 1999-2000 Study.
- 35. **Clean Film Plastic** means flexible plastic film. It is made from a variety of plastic resins including HDPE and LDPE. Examples include packaging wrap, shrink wrap, furniture wrap, and produce bags, bubble wrap, agricultural film, and building wrap.
- 36. **Dirty Film Plastic** means contaminated flexible plastic film and all other plastic film. Examples include garbage bags, food soiled bags, food wrappers, sandwich bags, potato chip bags, newspaper bags, mailing pouches. Note: This type was defined as Film Plastic in the 1999-2000 Study.

- 37. **Durable Plastic Items** means plastic objects other than containers and film plastic (typically products) that bear the numbers "1" through "7" in the triangular recycling symbol. These items are usually made to last for more than one use. Examples include outdoor furniture, plastic toys and sporting goods, and plastic house wares, such as mop buckets, dishes, and cutlery. This type also includes building materials such as house siding, window sashes and frames, housing for electronics such as computers, televisions and stereos, and plastic pipes and fittings.
- 38. **Expanded Polystyrene** means products composed of "Styrofoam." Examples include Styrofoam food service ware and packaging. Note: This type was defined as Remainder/Composite in the 1999-2000 Study.
- 39. **Remainder/Composite Plastic** means plastic that cannot be put in any other type. This type includes items made mostly of plastic but combined with other materials.

Organic

- 40. **Food** means food material resulting from the processing, storage, preparation, cooking, handling or consumption of food. This type includes material from industrial, commercial or residential sources. This type includes grape pomace and other processed residues or material from canneries, wineries, or other industrial sources.
- 41. **Palm, Succulent, Coral Tree** means fibrous plant or plant materials (e.g. leaves, trunk, seed pods, and roots) that tears into long stringy pieces. This type includes bamboo, bird of paradise, yucca, and agave, in addition to the following three:
 - a. *Palm* means any plant or plant material of the family Palmae having an unbranched trunk crowned by large pinnate or palmate leaves. Examples include palm fronds and monocot tree trunks of any size.
 - b. *Succulent* means any tropical or desert plant or plant materials that have thick fleshy tissue designed to retain water in a leaf or stem. This type includes ice plant, aloe, and pickle weed.
 - c. *Coral Tree* means any tree or plant material in the Erythrina family having, a spiny trunk, three leaflets, lobes, or foils and shoots bearing flowers of scarlet to coral red flowers and black seeds.

NOTE: Attachment 1, The City of San Diego's "Greenery Unacceptable Plants Flyer" provides photographs for the Palm, Succulent, Coral Tree type.
- 42. **Leaves and Grass** means plant material, except woody material, from any public or private landscapes. This type does not include Palm, Succulent, and Coral Tree.
- 43. **Prunings and Trimmings** means woody plant material up to 4 inches in diameter from any public or private landscape.
- 44. **Branches and Stumps** means woody plant material, branches and stumps that exceed 4 inches in diameter from any public or private landscape.
- 45. **Agricultural Crop Residues** means plant material from agricultural sources. Examples include orchard and vineyard prunings, vegetable byproducts from farming, residual fruits, vegetables, and other crop remains after usable crop is harvested.
- 46. **Grass Sod** means a section cut or torn from the surface of grassland, containing the matted roots of grass. Note: This type was defined as Leaves and Grass in the 1999-2000 Study.

- 47. **Manures** means manure and soiled bedding materials from domestic, farm, or ranch animals. Examples include manure and soiled bedding from animal production operations, race tracks, riding stables, animal hospitals, and other sources.
- 48. **Diapers** means reusable (cloth) or disposable (plastic and cloth) diapers as well as any contaminants.
- 49. **Textiles** means items made of thread, yarn, fabric, or cloth. Examples include clothes, fabric trimmings, draperies, and all natural and synthetic cloth fibers. This type does not include cloth covered furniture, or mattresses.
- 50. **Remainder/Composite Organic** means organic material that cannot be put in any other type. This type includes items made mostly of organic materials, but combined with other material types. Examples include leather items, cork, hemp rope, garden hoses, rubber items, hair, cigarette butts, feminine hygiene products, small wood products (such as Popsicle sticks and tooth picks), sawdust, animal carcasses and animal feces not mixed with kitty litter.

Electronics

- 51. **Brown Goods** means generally larger, non-portable electronic goods that have some circuitry. Examples include microwaves, stereos, VCRs, DVD players, large radios, and audio/visual equipment. Does not include items with video display devices. Note: This type was defined as Remainder/Composite Metal in the 1999-2000 Study.
- 52. **CRT** means items containing a cathode ray tube (CRT). Includes televisions, computer monitors, and other items containing a CRT. Note: This type was defined as Remainder/Composite Glass in the 1999-2000 Study.
- 53. **Computer-Related Electronics** means towers, laptops, and portable computers and computer peripherals (keyboard, mice, printers, disc drives, etc.). Note: This type was defined as Remainder/Composite Metal in the 1999-2000 Study.
- 54. **Other Consumer Electronics** means small electric appliances that cannot be put in any other type. Examples include power tools, curling irons, smoke detectors, and anything else that runs with a plug or battery. Note: This type was defined as Remainder/Composite Metal in the 1999-2000 Study.
- 55. **Video Display Devices (non-CRT devices)** means items with video displays larger than 4 inches. Includes portable DVD players and non-CRT televisions (such as LCD televisions). Note: This type was defined as Remainder/Composite Metal in the 1999-2000 Study.

Construction & Demolition

- 56. **Concrete** means a hard material made from sand, gravel, aggregate, cement mix and water. Examples include pieces of building foundations, concrete paving, and concrete/cinder blocks.
- 57. **Asphalt Paving** means a black or brown, tar-like material mixed with aggregate used as a paving material.
- 58. **Asphalt Composition Shingles** means composite shingles composed of fiberglass or organic felts saturated with asphalt and covered with inert aggregates. Commonly known as three tab roofing. Note: This type was defined as Asphalt Roofing in the 1999-2000 Study.

59. **Roofing Tar Paper/Felt** means a heavy paper impregnated with tar or a fiberglass or polyester fleece impregnated with tar and used as part of a roof for waterproofing. Note: This type was defined as Asphalt Roofing in the 1999-2000 Study.
60. **Roofing Mastic** means a paste-like material used as an adhesive or seal in roofing applications. Note: This type was defined as Asphalt Roofing in the 1999-2000 Study.
61. **Built-Up Roofing** means other roofing material made with layers of felt, asphalt, aggregates, and attached roofing tar and tar paper normally used on flat/low pitched roofs usually on commercial buildings. Note: This type was defined as Asphalt Roofing in the 1999-2000 Study.
62. **Other Asphalt Roofing Material** means any other roofing material containing asphalt that cannot be put into any of the other roofing material types. Note: This type was defined as Asphalt Roofing in the 1999-2000 Study.
63. **Clean Dimensional Lumber** means unpainted new or demolition dimensional lumber. Includes materials such as 2 x 4s, 2 x 6s, 2 x 12s, and other residual materials from framing and related construction activities. May contain nails or other trace contaminants. Note: This type was defined as Clean Dimensional Lumber in the 1999-2000 Study.
64. **Clean Engineered Wood** means unpainted new or demolition scrap from sheeted goods such as plywood, particleboard, wafer board, oriented strand board, and other residual materials used for sheathing and related construction uses. May contain nails or other trace contaminants. Note: This type was defined as Clean Dimensional Lumber in the 1999-2000 Study.
65. **Clean Pallets and Crates** means unpainted wood pallets, crates, and packaging made of lumber/engineered wood. Note: This type was defined as Clean Dimensional Lumber in the 1999-2000 Study.
66. **Other Wood Waste** means wood waste that cannot be put into any other material type. This type may include untreated/unpainted scrap from production of prefabricated wood products such as wood furniture or cabinets, untreated or unpainted wood roofing and siding, painted or stained wood, and treated wood. Note: This type was defined as Clean Dimensional Lumber in the 1999-2000 Study.
67. **Clean Gypsum Board** means unpainted gypsum wallboard or interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples include used or unused, broken or whole sheets. Gypsum board may also be called sheetrock, drywall, plasterboard, gypboard, gyproc, or wallboard.
68. **Painted/Demolition Gypsum Board** means painted gypsum wallboard or interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples include used or unused, broken or whole sheets. Gypsum board may also be called sheetrock, drywall, plasterboard, gypboard, gyproc, or wallboard.
69. **Carpet & Carpet Padding** means organic (e.g., wool) or synthetic carpet, carpet padding, and other soft floor coverings (e.g., synthetic turf).
70. **Rock, Soil and Fines** means rock pieces of any size and soil, dirt, and other matter. Examples include rock, stones, sand, clay, soil and other fines. This type also includes non-hazardous contaminated soil.

- 71. **Contaminated soil, street sweepings, drain cleanings** means soil contaminated with oil or other toxic materials, as well as material gathered from sweeping streets or cleaning storm drains (activities mainly conducted by City departments).
- 72. **Remainder/Composite C&D** means construction and demolition material that cannot be put in any other type. This type may include items from different categories combined, which would be very hard to separate. Examples include brick, ceramics, toilets, sinks, and fiberglass insulation.

Household Hazardous Waste

- 73. **Oil-Based Paint** means containers with oil-based paint in them.
- 74. **Water-Based Paint** means containers with water-based paint in them. This type does not include dried paint, empty paint cans, or empty aerosol containers.
- 75. **Vehicle and Equipment Fluids** means containers with fluids used in vehicles or engines. Examples include used antifreeze and brake fluid.
- 76. **Used Oil** means the same as defined in [Health and Safety Code section 25250.1\(a\)](#). Examples include spent lubricating oil such as crankcase and transmission oil, gear oil, and hydraulic oil.
- 77. **Lead-Acid Batteries** means batteries fueled by lead-acid cells, such as auto batteries.
- 78. **Household Batteries** means batteries such as AA, AAA, D, button cell, 9 volt, and rechargeable batteries used for flashlights, small appliances, watches, and hearing aids.
- 79. **Sharps** means hypodermic needles, pen needles, intravenous needles, lancets, and other devices that are used to penetrate the skin for the delivery of medications derived from sources other than medical facilities. Note: This type was defined as Remainder/Composite Household Hazardous in the 1999-2000 Study.
- 80. **Pharmaceuticals** means both prescription and over-the-counter medications and supplements in all forms, including pills, liquid medications, creams, and ointments. Does *not* include containers for these items, except for tubes for creams and ointments and other containers that cannot be easily separated from the product they contain. Note: This type was defined as Remainder/Composite Household Hazardous in the 1999-2000 Study.
- 81. **CFL, Fluorescent Tube and Other Mercury-Containing Items** means both compact and tube-style fluorescent lights, thermostats, thermometers, and other items that are readily identifiable as containing mercury. Since some mercury-containing items are not identifiable in the field, data for this material type should not be considered to be comprehensive. Note: This type was defined as Remainder/Composite Household Hazardous in the 1999-2000 Study.
- 82. **Remainder/Composite Household Hazardous** means household hazardous material that cannot be put in any other type. This type includes household hazardous material that is mixed.

Special Waste

- 83. **Ash** means a residue from the combustion of any solid or liquid material. Examples include ash from fireplaces, incinerators, biomass facilities, waste-to-energy facilities, and barbecues. This type also includes ash and burned debris from structure fires.
- 84. **Sewage Solids** means residual solids and semi-solids from the treatment of domestic waste water or sewage. Examples include biosolids, sludge, grit, screenings, and septage.

85. **Industrial Sludge** means sludge from factories, manufacturing facilities, and refineries. Examples include paper pulp sludge, and water treatment filter cake sludge.
86. **Treated Medical Waste** means medical waste that has been processed in order to change its physical, chemical, or biological character or composition, or to remove or reduce its harmful properties or characteristics, as defined in [Section 25123.5 of the Health and Safety Code](#).
87. **Bulky Items** means large hard to handle items that are not defined elsewhere in the material types list, including furniture such as couches and chairs, mattresses and other large items.
88. **Tires** means vehicle tires.
89. **Remainder/Composite Special Waste** means special waste that cannot be put in any other type. Examples include asbestos-containing materials such as certain types of pipe insulation and floor tiles, auto fluff, auto bodies, trucks, trailers, truck cabs, untreated medical waste, and artificial fireplace logs.

Mixed Residue

90. **Mixed Residue** means material that cannot be put in any other type. This type includes mixed residue that cannot be further sorted. Examples include clumping kitty litter, cosmetics, and residual material from a materials recovery facility or other sorting process that cannot be put in any other material type, including remainder/composite types.

Green Waste Samples Material List

The field crew sorted the 12 green waste samples using the following material list.

Compostables

Acceptable Compostables

1. **Acceptable Compostables** – Examples include leaves, grass, prunings, and vegetative food.

Minor Contaminants

Paper

2. **Recyclable Paper** – Examples include newspaper, mixed paper, and uncoated corrugated cardboard.
3. **Waxed/Coated Cardboard** – Produce boxes are an example of waxed/coated cardboard.
4. **Other paper** – Examples include tissue paper, paper plates, and paper products labeled as “compostable”.

Plastic

5. **Recyclable Plastic Bottles** – Examples include CRV plastic containers, condiment bottles, and cooking oil bottles.
6. **Recyclable Durable Plastics** – Examples include plant pots, buckets, pallets, and some toys.

- 7. **Film Plastic** – Examples include trash bags, Ziploc bags, saran wrap, and frozen vegetable bags.
- 8. **Plastic Chemical Bottles** – Examples include herbicides, pesticides, and household cleaner bottles.
- 9. **Other Plastic** – Examples include plastic cutlery and serving ware, Styrofoam, and food trays.

Metal

- 10. **CRV Cans** – Examples include aluminum and steel beer and beverage cans with a CRV label.
- 11. **Other Metal** – Examples include other small metal products and packaging: aluminum foil, and pots and pans.

Major Contaminants

Glass and Ceramic

- 12. **Recyclable Glass** – Examples include glass beer, soda, and condiments bottles and jars.
- 13. **Other Glass** – Examples include candle stick holders, drinking glasses, and window glass.
- 14. **Ceramics, Terra Cotta, and Pottery** – Examples include serving ware, and flower pots.

Non-compostable Organics

- 15. **Diapers** – Examples include baby diapers, adults diapers, and feminine hygiene products.
- 16. **Textiles** – Examples include clothes, shoes, curtains, and upholstery.
- 17. **Painted/Treated Wood** – Examples include fence posts, siding, and door or window trim.
- 18. **Pet Waste** – Examples include bagged or loose kitty litter and other pet waste or bedding.
- 19. **Animal Carcasses** – Examples include dead cats, rats, dogs, chickens, and guinea pigs. Meat food scraps were not included in this material type.
- 20. **Other Organics** – Examples include cigarette butts, meat and dairy food scraps, and small rubber items.

Hazardous Items

- 21. **Oils or Vehicle Fluids** – Examples include oil, antifreeze, washer fluid, or fuel additives.
- 22. **Batteries** – Examples include car batteries or any chemistry dry cell battery: alkaline, NiCd, etc.

Large Metal Appliances and Equipment

- 23. **Engine Parts** – Examples include large ferrous or non ferrous combustion engine parts, usually coated in lubricating fluid.
- 24. **Lawn Mowers** – Examples include whole or partial power or push mowers.

Other Contaminants

- 25. **Bagged Garbage** – Examples include whole or partial bags of garbage, regardless of contents.
- 26. **Other Contaminants** – Examples include electronics, carpet, bulky items, and concrete.

Appendix C: Study Design

This appendix includes the study design **as it was written prior to beginning field work**. Any major deviations from this are noted on page 13 in the Changes from the Original Study Design section.

Study Objectives

The City of San Diego conducted the 2012-2013 Waste Characterization Study to characterize the amounts and types of waste disposed by multiple sectors, including single family with and without yard waste service; multifamily; and commercial for three collection vehicle types, for military, and for self-haul. The findings from this study will be used to develop enhanced recycling and diversion strategies. The data also measured the impact of diversion programs implemented since previous studies and established a baseline for future comparison.

The study design was crafted so that the final composition and quantity data:

- Provided comparison with the 1999 study.
- Identified materials for potential diversion opportunities due to increased availability or enhanced processing technologies since the 1999 study.
- Provided a baseline for evaluating the future progress of current diversion programs.

Sampling Universe and Sampling Strata

The first step in planning a waste characterization study is to identify and carefully define the waste streams that will be studied, or the “universe” of waste. In this study, the universe included six substreams. A “substream” is determined by the particular generation, collection, or composition characteristics that make it a unique portion of the total waste stream. In this study, the universe included the following six substreams:

- Residential – Waste (refuse) generated by single family and multifamily residences located within the City of San Diego:
 - Single family residential – Waste generated by single family residences or multifamily residences that contained no more than four units. City collection vehicles collected these wastes curbside. Single family residences may or may not have curbside yard waste service, but all had comingled recycling collection.
 - Multifamily residential – Waste generated by multifamily residences (apartment buildings and condominiums) with more than four units. Franchised hauling companies collect these wastes.
- Commercial – Waste (refuse) generated by businesses and institutions that were located within the City of San Diego. Franchised hauling companies collect commercial wastes.

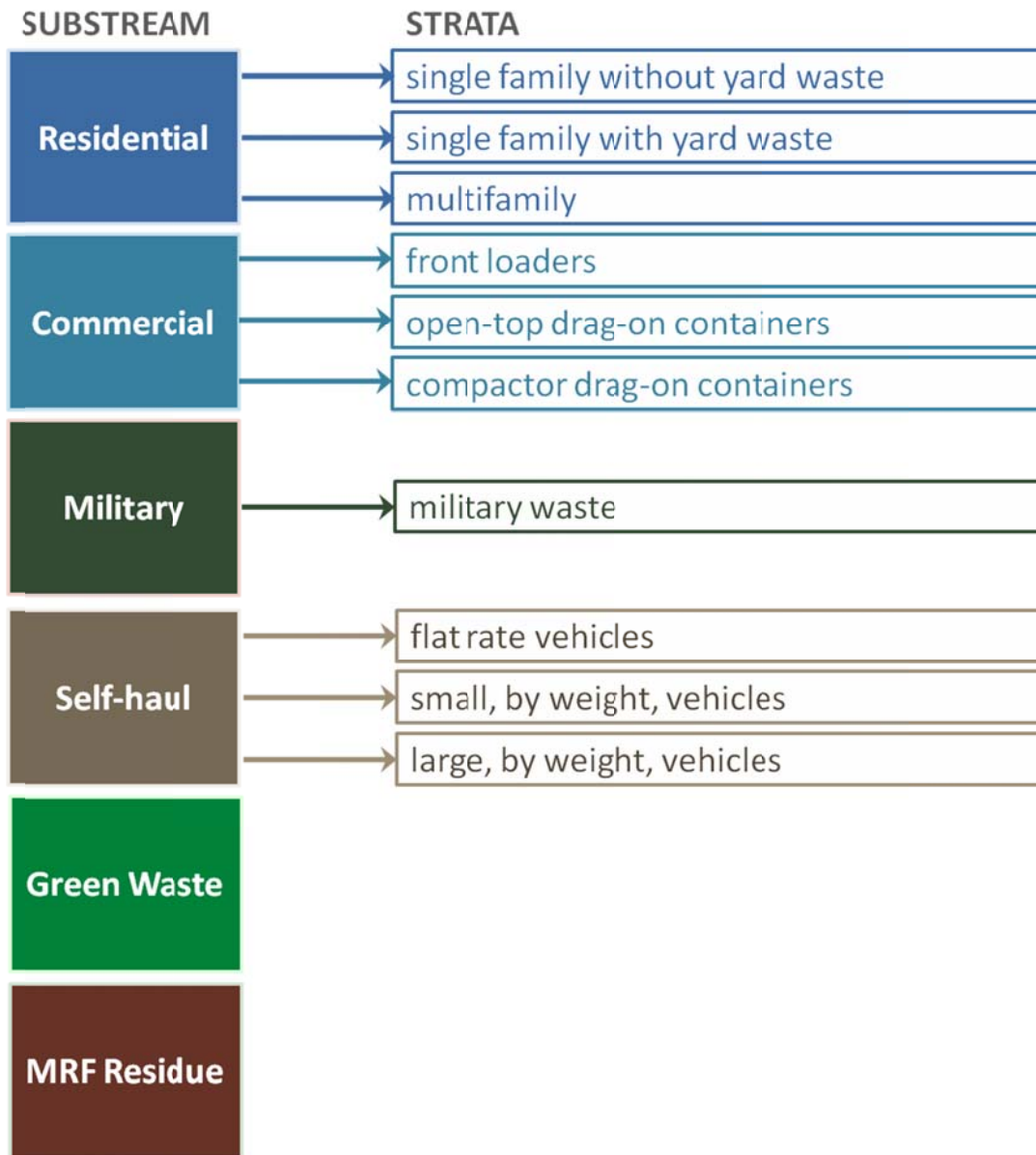
- Military – Waste (refuse) generated at the F. NAVSTA or MCAS. Franchised haulers and Navy contract haulers collect these wastes. (Military self-haul vehicles are not included in this substream.)
- Self-haul – Waste (including both refuse and demo) generated by residences, businesses and institutions (commercial), or military bases. The waste generator hauls their own waste in the self-haul substream, instead of relying on City collection vehicles or franchised hauling companies. This substream also included loads originating from outside the City of San Diego, but being disposed at Miramar Landfill..
- Green Waste – Compostable materials generated by single family residences within San Diego. City collection vehicles collect these compostable materials curbside.
- MRF Residue – Waste (demo residue) that was generated at EDCO’s Construction, Demolition and Inert (CDI) Recycling Facility and was non-recyclable or was otherwise undesirable. This waste was typically post-sort waste with recyclable materials removed.¹

For this study, four of the six substreams had associated sampling strata. Figure 64 lists each substream and its associated sampling strata, where applicable. This study allocated samples to and documented the quantities and composition of waste from each stratum.

The residential substream was divided into three strata as noted above and in Figure 64: single family with yard waste collection service, single family without yard waste collection service, and multifamily. The commercial substream was divided into three strata by collection vehicle. Self-haul loads were stratified by the type of vehicle disposing of the material. The field crew noted the generator type for self-haul loads, but this study did not set sampling targets for each of the generator types. The self-haul generator types included City departments, commercial generators, military generators, and residential generators. Self-haul loads from military generators included all military self-hauled waste, and were not limited to the F. NAVSTA or MCAS.

¹ Existing tonnage data was incorporated into final analysis. MRF residue loads were not hand-sorted or visually characterized.

Figure 64. Sampling Universe and Sampling Strata



Sampling Calendar and Substream Allocations

This study took place over three seasons. Sampling dates for the three seasons were scheduled to represent each season equally and avoid sampling on or near major holidays. The fall season was scheduled for October 22, 2012 through November 9, 2012. The winter season was scheduled for January 21, 2013 through February 8, 2013. The summer season was scheduled for June 1, 2013 through June 23, 2013. All samples were collected and sorted at the Miramar Landfill.

Each seasonal event spanned 15 to 17 days with samples equally divided among seasons and days of the week. Saturday sampling was included in the self-haul vehicle study. Table 1 summarizes the sample goals by substream, strata, and season.

Table 63. Sampling Allocation by Substream, Strata, and Season

Substream	Strata	Sample Goals			
		Oct./Nov.	Jan./Feb.	April/May	Total
residential	single family without yard waste service	30	30	30	90
residential	single family with yard waste service	30	30	30	90
residential	multifamily	30	30	30	90
commercial	front loader	40	40	40	120
commercial	open-top drag-on containers	40	40	40	120
commercial	compactor drag-on containers	40	40	40	120
military		10	10	10	30
hand sort subtotal		220	220	220	660
self-haul	flat rate vehicle	125	125	125	375
self-haul	small by-weight vehicles	90	90	90	270
self-haul	large by-weight vehicles	52	52	52	156
self-haul visual total		267	267	267	801
green waste		4	4	4	12

Obtaining and Sorting Samples

Load Selection

The first step in obtaining samples was to select loads to extract a sample from. The procedures to select loads varied by substream. Loads from substreams with regularly scheduled waste collection were pre-selected, while self-haul loads, military loads, and commercial loads arriving in vehicles other than front loaders were selected using systematic selection (selecting every n^{th} vehicle):

- Pre-selected loads were selected prior to the actual sort date.
- Systematically-selected loads were selected on the day of sorting.

Table 64 summarizes the load selection method used for each sampling substream and strata.

Table 64. Load Selection Method

Substream	Strata	Selection Method
residential		pre-selected
commercial	front loader	pre-selected
commercial	open drag-on containers	systematic selection
commercial	compactor drag-on containers	systematic selection
military		systematic selection
self-haul		systematic selection
green waste		pre-selected

Pre-selected Loads

Cascadia pre-selected regularly scheduled residential, commercial front-end loader, and green waste loads, using route data provided by the City of San Diego. The City provided Cascadia with complete route data spreadsheets for the following substreams:

- City-hauled single family loads
- Franchise hauled multifamily and commercial loads delivered in front-end loaders.
- City-hauled green waste loads

Table 65 shows an example of the route data for one day.

Table 65. Example Load Selection

Day	Strata	Route #	Truck #	Tip #	Sample?
Mon	single family without yard waste service	12	34469	1	N
Mon	single family without yard waste service	12	36784	2	Y
Mon	single family without yard waste service	54	39702	1	Y
Mon	single family without yard waste service	32	33136	1	N
Mon	single family without yard waste service	22	33710	1	Y
Mon	single family without yard waste service	22	35310	2	N

Cascadia selected loads from the route data that the City provided using the following five steps:

1. Compiled a complete list of all routes using route data.
2. Sorted the list by day of service.
3. Assigned each route a random number.
4. Selected routes from the randomized list until the daily route selection goals are fulfilled
5. Randomly selected load (1st, 2nd, or 3rd load of the day).

Selected loads for each sampling day were summarized on a *Vehicle Selection Sheet*.

Cascadia distributed the *Vehicle Selection Sheets* and *Sample Placards* to route supervisors at the franchised haulers and City collections prior to each sampling event. The route supervisors distributed *Sample Placards* to the drivers of the loads selected for sampling. The route supervisor made any changes to the anticipated truck numbers prior to *Sample Placard* distribution to ensure that vehicle identification and sample selection occurred as planned at the Miramar Landfill.

This study was designed to sample pure loads of multifamily and commercial waste that was collected by franchised haulers. A pure load is a load that is comprised of material from only one sampling stratum, such as multifamily residential generators. The franchised haulers and the City of San Diego worked together to achieve this on sampling days. For example, The City asked haulers for selected routes that are normally mixed (e.g. commercial mixed with multifamily residential) to modify their routes to bring in a pure commercial load or a pure multifamily loads.

Examples of field forms appear in Appendix E: Example Field Forms.

Systematic Load Selection

Cascadia used a systematic selection process to select loads of self-hauled waste, loads from commercial open top containers, loads from compactor drag-on containers, and loads delivered by franchised and navy contract haulers from the two military bases. Systematic selection consists of taking every n^{th} vehicle entering the facility after a randomly selected start time. The sampling interval (n) was determined for each stratum by dividing the day's expected vehicle count in that stratum by the number of samples needed in that stratum on that day. The expected number of arriving vehicles was based on vehicle traffic data the City will provide to Cascadia. This data included the average number of vehicles entering Miramar Landfill, by vehicle type, by day of the week. Table 66 provides an example data table.

Table 66. Example of Miramar Landfill Vehicle Traffic Data Table

Substream	Strata	Average Number of Vehicles						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
commercial	open-top drag-on containers							
commercial	compactor drag-on containers							
military								
self-haul	flat rate vehicles							
self-haul	small by-weight vehicles							
self-haul	large by-weight vehicles							

Cascadia provided fee booth attendants with a *Vehicle Selection Sheet*, *Sample Placards*, and instructions regarding fee booth staff's roles in selecting the commercial open and compactor drag-on containers, military loads, and self-haul vehicles prior to sampling. When a vehicle was selected for sampling, the attendant noted the vehicle type and source on a *Sample Placard* and placed the *Sample Placard* on that vehicle's windshield or asked the driver to place it on the vehicle dashboard. The attendant directed selected loads to the designated sampling area.

Miramar Landfill has a system that stores tare weights for most vehicles entering the facility. Therefore most vehicles had a receipt noting their net weight when they arrived at the landfill face. Vehicles selected for sampling that did not have receipts noting their net weights were sent back to the fee booth with a tag (weigh-back ticket). The fee booth staff collected the weigh-back ticket from the vehicle, noted the vehicle's net weight on the ticket, and saved it for the field staff to collect at the end of the sampling day.

Sampling Procedures

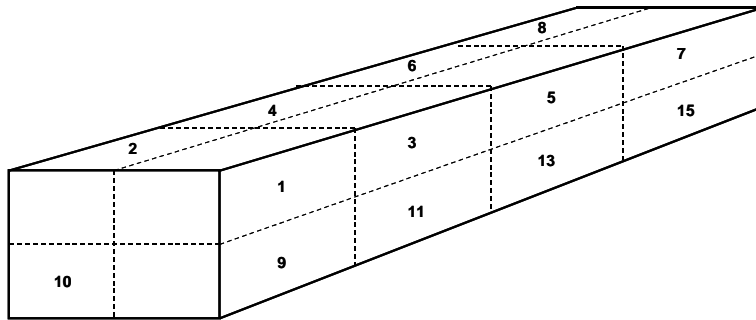
Depending on the substream, samples were either hand-sorted or visually characterized using the methods outlined below. For both sorting procedures, the field supervisor first collected the *Sample Placard* from the driver of the selected load and verified the load's description.

Hand-sorting Procedure

Selected samples from loads of City-collected residential refuse, franchised hauler-collected commercial and multifamily refuse delivered in front-end loaders, all drag-on container material, and all military refuse were hand-sorted using the following procedure:

- The driver dumped the selected load in an elongated pile. The sampling crew manager selected a sample from this pile using an imaginary 16-cell grid (as shown in Figure 65) superimposed over the dumped material. The sampling crew manager selected one cell from this grid to extract a sample from.

Figure 65. 16-Cell Grid for Sampling



- A 200 lb. sample from the selected portion of the load was placed on a tarp, and the sampling crew member took a photograph using a digital camera. The *Sample Placard* that identified each sample was positioned so that it was visible in each photograph. Figure 66 shows a sample on a tarp with the *Sample Placard* visible.
- The sorting crew sorted the sample by material type into separate baskets. The individual members of the sorting crew typically specialize in groups of materials, such as papers or plastics. The crew manager monitored the homogeneity of material in the baskets as they accumulated, rejecting any materials that were improperly classified. The material list and definitions are presented in Appendix B: Material Type Definitions.
- The sampling crew manager verified the purity of each material as it was weighed in its basket, using a pre-calibrated scale, and recorded each material weight on the *Sample Tally Sheet*.
- The sorting crew counted the number of sharps in each sample after weighing.
- The sorting crew set aside any hazardous materials encountered in samples, and notified landfill staff for proper handling and disposal.

Figure 66. Tarped Sampled with Sample Placard

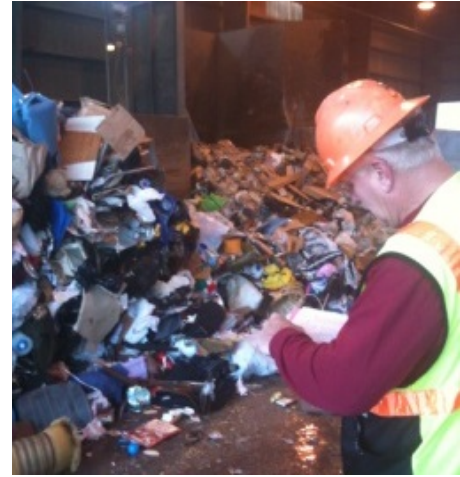


Visual Characterization Procedure

All self-hauled refuse and demo waste was characterized using volumetric-based visual estimations. A trained crewmember used the following steps to characterize these loads:

- **Obtain information about the load.** At the sampling area, the crew member recorded key information, including the sample ID number, vehicle type, and sector on the *Visual Characterization Form*.
- **Photograph the sample.** The crewmember took a photograph of the sample using a digital camera. The *Sample Placard* was positioned so that it is visible in each photograph.
- **Measure load volume.** The crewmember used a tape measure to record the length, width, and height of the load on the *Visual Characterization Form*.
- **Note which material classes are present.** After the driver dumped the load onto the ground, the crewmember walked entirely around the load and noted on the *Visual Characterization Form* which **material classes** were present in the load. **Material classes** are identified with green headings in Appendix A.
- **Estimate composition by volume for each material class.** Beginning with the largest **material class** present (e.g., **Paper**), the crewmember estimated the volumetric percentage of this **material class** and recorded it on the form. The crewmember repeated this process for the next most prevalent **material class**, until the volumetric percentage of every **material class** was estimated. The crewmember then calculated the sum of all **material class** volumetric percentages, ensuring that they totaled 100 percent. Figure 67 shows a crewmember completing a visual characterization.
- **Estimate composition by volume for each material type.** The crewmember considered *material types* within each material class separately, and estimated the percentage of each *material type*. For example, *newspaper* is a *material type* within the **Paper material class**. While considering only the **Paper material class**, the crewmember estimated the volume percentage of *newspaper*. The crewmember did the same for every other *material type* within the **Paper material class** (e.g., *corrugated cardboard*, *compostable paper*). The crewmember then ensured that the summed estimated volumetric composition percentages of the *material types* equaled 100 percent.
- **Check and reconcile percentage data.** The crewmember ensured the percentage estimates for the **material classes** and for the *material types* within each material class totaled 100 percent.
- **Convert volume estimates to weight estimates.** This step was done at Cascadia's offices. Data from the *Visual Characterization Forms* were entered into a customized database, and accepted

Figure 67. Completing a Visual Characterization Form



density conversion factors were used to develop estimates of the weight of each material component in each load.

Green Waste Loads

Cascadia also oversaw the hand-sorting of green waste collected curbside from single family residences to determine the types and amounts of contamination. Each load, which typically weighed about seven tons, was fully sorted into 10 material types:

Compostables

1. Acceptable compostables

Minor Contaminants

2. Paper
3. Plastic
4. Metal

Major Contaminants

5. Glass & Ceramic
6. Non-compostable organics
7. Hazardous items
8. Bagged garbage (MSW)
9. Large metal appliances & equipment

Other Contaminants

10. Other Contaminants

For two days each season, Cascadia provided the scales and oversight required to conduct the sorts with a City-provided crew. Sampling events were distributed to ensure sampling spanned every week day (Monday, Tuesday, Wednesday, etc.) and that samples were obtained from the two every-other-week (EOW) collection calendars (i.e., orange week sampled at least once) over the three seasons.

As part of our management and oversight role and prior to sorting, Cascadia took digital photographs of the loads with an identifying placard visible in each photograph. We also took photographs of the contaminants that were recovered from each sorted load.

Method to Obtain Tonnage Data

Accurate tonnage information is necessary to compile the composition and quantity analysis. The City of San Diego provided the tonnage information for each sampling strata.

Appendix D: Waste Characterization Calculations

Estimating Waste Composition

Waste composition estimates were calculated using a method that gave equal weighting or “importance” to each sample within a given stratum. Confidence intervals (error ranges) were calculated based on assumptions of normality in the composition estimates.

In the descriptions of calculation methods, the following variables are used frequently:

- i denotes an individual sample;
- j denotes the material type;
- c_j is the weight of the material type j in a sample;
- w is the weight of an entire sample;
- r_j is the composition estimate for material j (r stands for *ratio*);
- s denotes a particular sector or subsector of the waste stream; and
- n denotes the number of samples in the particular group that is being analyzed at that step.

Estimating the Composition

The following method was used to estimate the composition of City of San Diego’s waste.

For a given stratum (that is, for the samples belonging to the same waste sector within the same jurisdiction), the composition estimate denoted by r_j represents the ratio of the component’s weight to the total weight of all the samples in the stratum. This estimate was derived by summing each component’s weight across all of the selected samples belonging to a given stratum and dividing by the sum of the total weight of waste for all of the samples in that stratum, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i}$$

where:

- c = weight of particular component;
- w = sum of all component weights;
- for $i = 1$ to n , where n = number of selected samples; and
- for $j = 1$ to m , where m = number of components.

For example, the following simplified scenario involves three samples. For the purposes of this example, only the weights of the component *carpet* are shown.

	Sample 1	Sample 2	Sample 3
Weight (c) of carpet (in lbs)	5	3	4
Total Sample Weight (w) (in lbs)	80	70	90

$$r_{\text{Carpet}} = \sum \frac{5 + 3 + 4}{80 + 70 + 90} = 0.05$$

To find the composition estimate for the component *carpet*, the weights for that material are added for all selected samples and divided by the total sample weights of those samples. The resulting composition is 0.05, or 5%. In other words, 5% of the sampled material, by weight, is *carpet*. This finding is then projected onto the stratum being examined in this step of the analysis.

The confidence interval for this estimate was derived in two steps. First, the variance around the estimate was calculated, accounting for the fact that the ratio included two random variables (the component and total sample weights). The variance of the ratio estimator equation follows:

$$\text{Var}(r_j) \approx \left(\frac{1}{n} \right) \left(\frac{1}{\bar{w}^2} \right) \left(\frac{\sum_i (c_{ij} - r_j w_i)^2}{n-1} \right)$$

where:

$$\bar{w} = \frac{\sum_i w_i}{n}$$

(For more information regarding Equation 2, refer to *Sampling Techniques, 3rd Edition* by William G. Cochran [John Wiley & Sons, Inc., 1977].)

Second, error rate at the 90% confidence level were calculated for a component's mean as follows:

$$r_j \pm (z \sqrt{\text{Var}(r_j)})$$

where z = the value of the z-statistic (1.645) corresponding to a 90% confidence level.

Composition results for strata were then combined, using a weighted averaging method, to estimate the composition of larger portions of the waste stream (for example the self-haul residential waste composition for each of the vehicle types was combined to estimate the composition for San Diego's overall self-haul residential substream). The relative tonnages associated with each stratum served as the weighting factors. The calculation was performed as follows:

$$O_j = (p_1 * r_{j1}) + (p_2 * r_{j2}) + (p_3 * r_{j3}) + \dots$$

where:

- p = the proportion of tonnage contributed by the noted waste stratum (the weighting factor);
- r = ratio of component weight to total waste weight in the noted waste stratum (the composition percent for the given material component); and
- for $j = 1$ to m , where m = number of material components.

For example, the above equation is illustrated here using three waste strata.

	Stratum 1	Stratum 2	Stratum 3
Ratio (r) of carpet	5%	10%	10%
Tonnage	25,000	100,000	50,000
Proportion of tonnage (p)	14.3%	57.1%	28.6%

To estimate the portion of larger portions of the waste stream, the composition results for the three strata are combined as follows.

$$O_{Carpet} = (0.143 * 0.05) + (0.571 * 0.10) + (0.286 * 0.10) = 0.093 = 9.3\%$$

Therefore, 9.3% of this examined portion of the waste stream is *carpet*.

The variance of the weighted average was calculated as follows:

$$\text{Var}(O_j) = (p_1^2 \text{Var}(r_{j1})) + (p_2^2 \text{Var}(r_{j2})) + (p_3^2 \text{Var}(r_{j3})) + \dots$$

Weighted Composition Results

Composition results for all waste substreams were combined, using a weighted averaging method, to estimate the composition of the entire waste stream. The relative tonnages associated with each substream served as the weighting factors. The calculation was performed as follows:

$$O_j = (p_1 * r_{j1}) + (p_2 * r_{j2}) + (p_3 * r_{j3}) + \dots$$

where:

- p = the proportion of tonnage contributed by the noted waste substream (the weighting factor);
- r = ratio of component weight to total waste weight in the noted waste substream (the composition percent for the given material component); and
- for $j = 1$ to m , where m = number of material components.

The following scenario illustrates the above equation. This example involves the component *carpet* in three substreams.

	Waste Sector 1	Waste Sector 2	Waste Sector 3
Ratio of carpet (r)	0.05	0.10	0.15
Proportion of Tonnage (p)	50%	25%	25%

$$O_{\text{Carpet}} = (0.50 * 0.05) + (0.25 * 0.10) + (0.25 * 0.15) = 0.0875$$

So, it is estimated that 0.0875 or 8.75% of the entire waste stream is composed of *carpet*.

The variance of the weighted average was calculated as follows:

$$\text{Var}(O_j) = (p_1^2 \text{Var}(r_{j1})) + (p_2^2 \text{Var}(r_{j2})) + (p_3^2 \text{Var}(r_{j3})) + \dots$$

Converting Volumes to Weights

The composition calculations rely on the availability of individual material weights for each sample. As described the project team characterized self-haul loads using volume estimates for each material type. Cascadia converted volume estimates to weights using industry standard waste density conversion factors. These factors are listed in Table 67 and data sources accompany the table.

Using the volume-to-weight conversion factors and the volume estimates obtained during the characterization of each sample, individual material weights were calculated using the following formula:

$$c = m \times s \times v \times d$$

where:

- c = the total weight of the specific material in the sample
- m = percentage estimate of the material type, as a portion of material class (e.g., the extent to which *newspaper* constitutes all of the **Paper** in the sample)
- s = percentage estimate of the material class, as a portion of all of the material in the sample (e.g., the extent to which **Paper** constitutes all of the material in the sample)
- v = total volume of the sample (in cubic yards)
- d = density conversion of the material (in pounds/cubic yard)

Table 67. Volume-to-Weight Conversion Factors for Visually Characterized Loads

Material Class	Material Type	Density (lbs/yd ³)	Source	Notes
Paper	Uncoated Corrugated Cardboard	53	CIWMB2004	
Paper	Waxed Corrugated Cardboard	53	CIWMB2004	
Paper	Paper Bags	108	San Diego County	
Paper	Newspaper	360	U.S. EPA	
Paper	White Ledger Paper	158	U.S. EPA	
Paper	Mixed Waste Paper	158	U.S. EPA	
Paper	Magazines	364	U.S. EPA	
Paper	Phone Books and Directories	250	U.S. EPA	
Paper	Compostable/Soiled Paper	138	Starbucks	
Paper	Aseptic/Milk Containers	158	U.S. EPA	Used <i>Mixed Waste Paper</i> density
Paper	Remainder/Composite Paper	364	U.S. EPA	
Plastic	CRV HDPE Containers	24	U.S. EPA	
Plastic	Non-CRV HDPE Containers	24	U.S. EPA	
Plastic	CRV PETE Containers	35	U.S. EPA	
Plastic	Non-CRV PETE Containers	35	U.S. EPA	
Plastic	Compostable Biodegradable Plastic Containers	35		Used Non-CRV PETE Containers density
Plastic	Miscellaneous Plastic Containers	30		Average of <i>Non-CRV PETE Containers</i> and <i>Non-CRV HDPE Containers</i>
Plastic	Plastic Grocery and Merchandise Bags	23	Tellus	
Plastic	Clean Film Plastic	23	Tellus	
Plastic	Dirty Film Plastic	23	Tellus	
Plastic	Durable Plastic Items	50	U.S. EPA	
Plastic	Expanded Polystyrene	10	Tellus	

Table 67 (cont'd). Volume-to-Weight Conversion Factors for Visually Characterized Loads

Material Class	Material Type	Density (lbs/yd ³)	Source	Notes
Plastic	Remainder/Composite Plastic	50	U.S. EPA	
Glass	CRV Clear Glass Bottles	600	U.S. EPA	
Glass	Non-CRV Clear Glass Bottles and Containers	600	U.S. EPA	
Glass	CRV Brown Glass Bottles	600	U.S. EPA	
Glass	Non-CRV Brown Glass Bottles and Containers	600	U.S. EPA	
Glass	CRV Other Colored Glass Bottles	600	U.S. EPA	
Glass	Non-CRV other Colored Glass Bottles and Containers	600	U.S. EPA	
Glass	Flat Glass	1,400	U.S. EPA	
Glass	Remainder/Composite Glass	1,400	U.S. EPA	
Metal	Tin/Steel Cans	150	U.S. EPA	
Metal	Major Appliances	145	CIWMB2004	
Metal	Other Ferrous Metal	225	CIWMB2004	
Metal	CRV Aluminum & Tin Cans	65	U.S. EPA	
Metal	Non-CRV Aluminum Cans	65	U.S. EPA	
Metal	Used Oil Filters	834	Tellus	
Metal	Other Non-Ferrous Metal	225	CIWMB2004	
Metal	Remainder/Composite Metal	143		Average of metals, without <i>Used Oil Filters</i>
Organics	Food	486	FEECO, Tellus	
Organics	Palm, Succulent, Coral Tree	127		<i>Used prunings and trimmings</i> density
Organics	Leaves and Grass	313	U.S. EPA	
Organics	Prunings and Trimmings	127	CIWMB2004	
Organics	Branches and Stumps	127	CIWMB2004	

Table 67 (cont'd). Volume-to-Weight Conversion Factors for Visually Characterized Loads

Material Class	Material Type	Density (lbs/yd ³)	Source	Notes
Organics	Agricultural Crop Residues	313	U.S. EPA	Used <i>leaves and grass</i> density
Organics	Grass Sod	313	U.S. EPA	Used <i>leaves and grass</i> density
Organics	Maures	675	FEECO	
Organics	Diapers	1,150	UWMedical	
Organics	Textiles	225	Tellus	
Organics	Remainder/Composite Organics	225		Average of all organics materials, except Manure
Electronics	Brown Goods	343	CIWMB Staff Measurement	
Electronics	CRT	405	CIWMB2004	
Electronics	Computer-Related Electronics	354	CIWMB Staff Measurement	
Electronics	Other Consumer Electronics	438	CIWMB Staff Measurement	
Electronics	Video Display Devices (non-CRT devices)	405	CIWMB2004	Used <i>CRT</i> density
Construction & Demolition	Concrete	860	CIWMB2004	
Construction & Demolition	Asphalt Paving	773		Tellus scaled down by factor from Florida C&D study
Construction & Demolition	Asphalt Composition Shingles	731	CIWMB2004	
Construction & Demolition	Roofing Tar Paper/Felt	392	CIWMB2004	
Construction & Demolition	Roofing Mastic	1,080	FEECO	
Construction & Demolition	Built-Up Roofing	731	CIWMB2004	
Construction & Demolition	Other Asphalt Roofing Material	731	CIWMB2004	
Construction & Demolition	Clean Dimensional Lumber	169	CIWMB2004	
Construction & Demolition	Clean Engineered Wood	268	CIWMB2004	
Construction & Demolition	Clean Pallets and Crates	169	CIWMB2004	
Construction & Demolition	Other Wood Waste	169	CIWMB2004	

Table 67 (cont'd). Volume-to-Weight Conversion Factors for Visually Characterized Loads

Material Class	Material Type	Density (lbs/yd ³)	Source	Notes
Construction & Demolition	Clean Gypsum Board	467	CIWMB2004	
Construction & Demolition	Painted/Demolition Gypsum Board	467	CIWMB2004	
Construction & Demolition	Carpet & Carpet Padding	860	CIWMB2004	
Construction & Demolition	Rock, Soil and Fines	999	CIWMB2004	
Construction & Demolition	Contaminated Soil, Street Sweepings, Drain Cleaning	999	CIWMB2004	Used rock, soils, and fines density
Construction & Demolition	Remainder/Composite C&D	417	CIWMB2004	Average of C&D materials
HHW	Oil-Based Paint	1,836	Tellus	
HHW	Water-Based Paint	1,836	Tellus	
HHW	Vehicle and Equipment Fluids	1,653	Tellus	
HHW	Used Oil	1,525	Tellus	
HHW	Lead-Acid Batteries	2,400	CIWMB Staff Estimate	
HHW	Household Batteries	2,400	CIWMB Staff Estimate	
HHW	Sharps	250	Cascadia	
HHW	Pharmaceuticals	486	FEECO	
HHW	CFL, Fluorescent Tube and Other Mercury-Containing	300	UWMedical	
HHW	Remainder/Composite Household Hazardous	1,671		Average of HHW liquids
Special Waste	Ash	1,013	FEECO	
Special Waste	Sewage Solids	945	FEECO	
Special Waste	Industrial Sludge	1,418	Tellus	
Special Waste	Treated Medical Waste	63	CIWMB2004 & UWMedical	
Special Waste	Bulky Items	80	Tellus	
Special Waste	Tire	200	CIWMB Staff Estimate	
Special Waste	Remainder/Composite Special Waste	140		Average of Bulky Items and Tires density
Mixed Residue	Mixed Residue	999	FEECO	

Cascadia refers to direct measurements of representative samples taken by Cascadia staff members for this and other studies.

CIWMB 2004 refers to *Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition Waste*, performed by Cascadia Consulting Group for California Integrated Waste Management Board, 2006 or measurements, estimates, and correspondence from California Integrated Waste Management Board staff during 2006.

FEECO refers to FEECO International, Complete Systems and Equipment Handbook, 9th printing.

Florida C&D Study refers to *Converting C&D Debris from Volume to Weight: A Fact Sheet for C&D Debris Facility Operators*, University of Florida, 2000.

San Diego refers to conversion factors that were used in the San Diego Waste Comp. Study, conducted by Cascadia Consulting Group in 2000.

Starbucks refers to unpublished work completed for the Starbucks Corporation by Cascadia Consulting Group.

Tellus refers to the Tellus Institute, Boston, Massachusetts.

U.S. EPA refers to two sources. 1) *Business Waste Prevention Quantification Methodologies - Business Users Guide*: Washington, D.C. and Los Angeles: U.S. Environmental Protection Agency, Municipal and Industrial Solid Waste, and University of California at Los Angeles Extension, Recycling and Municipal Solid Waste Management Program: Grant Number CX 824548-01-0, 1996. 2) U.S. Environmental Protection Agency's "Measuring Recycling: A Guide for State and Local Governments," document no. EPA530-R-97-011, published September 1997.

UW Medical refers to unpublished work completed for the University of Washington Medical Center by Cascadia Consulting Group.

Appendix E: Example Field Forms

Figure 68. Example City and Franchise-collected Vehicle Selection Sheet

City Collections, Commercial, and Military Vehicle Selection Form																											
San Diego Waste Characterization																											
Date: 6-17												Lane Number															
REFUSE ONLY! NO DEMO.																											
Pre-Selected Loads																											
<p>*These loads have been selected for sampling, drivers should have a pink placard*</p> <p>1. When a pre-selected vehicle arrives, check for placard. If missing, provide one to driver and place in window.</p> <p>2. Instruct them to drive to the commercial face and follow signs to sorting area.</p>																											
Pre-Selected CITY COLLECTIONS																											
Hauler	Truck #	Route #	ID	Load #	Account Type																						
-----		####	-----	1	SFR																						
-----		####	-----	2	SFR																						
-----		####	-----	2	SFR																						
-----		####	-----	3	SFY																						
-----		####	-----	2	SFY																						
-----		####	-----	2	SFY																						
Pre-Selected COMMERCIAL FRANCHISED HAULERS																											
Hauler	Truck #	Route #	Est. Arrival	Special	Pass	Instructions																					
-----		####			X	Verify that the load is from businesses																					
-----		####		X	X	Verify that the load is from businesses																					
-----		####		X	X	Verify that the load is from businesses																					
-----		####				Verify that the load is from businesses																					
-----		####		X	X	Verify that the load is from multifamily residences																					
-----		####			X	Verify that the load is from multifamily residences																					
-----		####		X	X	Verify that the load is from multifamily residences																					
Systematically Selected Loads *Do not sample from accounts ####*																											
<p>*These loads are selected for sampling by the scalehouse*</p> <p>1. Cross off each number as an eligible vehicle passes over the scalehouse.</p> <p>2. When a circled number comes up, cross it off and hand the driver a pink placard to place in the window.</p>																											
DRAG - ON CONTAINERS (NO MILITARY!)																											
Open Top drag-on containers:												NEED:				3 TOTAL				SAMPLE EVERY				VEHICLE			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22						
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45					
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68					
Compactor drag-on containers:												NEED:				3 TOTAL				SAMPLE EVERY				VEHICLE			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22						
MILITARY																											
<p>1. Is the hauler a franchise or NAVY contract hauler? If yes, proceed to next question.</p> <p>2. Is the refuse from F. NAVSTA or MCAS? If yes, cross it off.</p> <p>3. When a circled number comes up, cross it off and hand the driver a pink placard to place in the window.</p> <p>4. Instruct them to drive to the commercial face and follow signs to sorting area.</p>																											
Packer or drag-on												NEED:				1 TOTAL				SAMPLE EVERY				VEHICLE			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22						

Figure 69. Example Self-haul Vehicle Selection Sheet

Self-haul Vehicle Selection Form																							
City of San Diego Waste Characterization																							
Date: 6/17/13												Lane Number											
REFUSE and DEMO																							
1. Cross off each number as an eligible vehicle passes through the scalehouse.																							
2. When a circled number comes up, cross it off and hand the driver a pink placard to place in the window.																							
3. Instruct them to drive to the <u>self-haul area</u> where they will be met by the sorting supervisor.																							
veh class ratg desc: #####																							
NEED:												TOTAL		SAMPLE EVERY								VEHICLE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	21	22	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	
92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	
115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	
138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	
184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	
veh class ratg desc: #####																							
NEED:												TOTAL		SAMPLE EVERY								VEHICLE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	21	22	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	
veh class ratg desc: #####																							
NEED:												TOTAL		SAMPLE EVERY								VEHICLE	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	21	22	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	
veh class ratg desc: #####																							
NEED:												TOTAL		SAMPLE EVERY								VEHICLE	
1	2	3																					

Figure 70. Example Sample Placard

City Collections	6/3/2013
	SFR-3111
	Route #: _____
	Load #: 2
	Truck #: _____
	Cell#: 4

2012 San Diego Waste Composition Study

*If found please contact Cascadia Consulting Group, 206 343 9759
Reward Offered*

Figure 50 (cont'd). Example Hand Sort Tally Sheet (back)

Tally Sheet - Page 2	2012 San Diego Waste Composition Study	CONSTRUCTION DEBRIS	Concrete				
			Asphalt Paving				
			Asphalt Composite Shingles				
			Roofing Tar Paper/Felt				
			Roofing Mastic				
			Built-Up Roofing				
			Other Asphalt Roofing Material				
			Clean Dimensional Lumber				
			Clean Engineered Wood				
			Clean Pallets and Crates				
			Other Wood Waste				
			Clean Gypsum Board				
			Painted/Demo Gypsum Board				
			Carpet & Carpet Padding				
			Rock, Soil, and Fines				
			Contaminated soil, st. swp., drn.				
			R/C C&D				
		HHW	Oil-Based Paint				
			Water-Based Paint				
			Vehicle and Equipment Fluids				
			Used Oil				
			Lead-Acid Batteries				
			Household Batteries				
			Sharps				
			Pharmaceuticals				
			CFL, Fluor. Tube, Other Mercury				
			R/C Household Hazardous				
		SPECIAL WASTE	Ash				
			Sewage Solids				
			Industrial Sludge				
			Treated medical Waste				
			Bulky Items				
			Tires				
			R/C Special Waste				
		ELECTRONICS	Brown Goods				
			CRT				
			Computer-Related Electronics				
			Other Consumer Electronics				
			Video Display (non-CRT)				
		MIXED RESIDUE					
			Mixed Residue				

If found please contact Cascadia Consulting Group, 206 343 9759
Reward Offered

Figure 72. Example Visual Characterization Sheet

San Diego WCS 2011 Visual Tally Sheet

Sample Data: Date: _____ Sample ID: _____ Load Origin: City / Non-City Material Type: Refuse / C&D	Vehicle Type: Flat Rate: Car / SUV / Pickup / Small Trailer Double Axle Trailer / Combo PU&Trailer By Weight: Small / Large / X-Large (military only)	Origin: Business-Non-residential / City Other Dept. / City Parks Dept. City Streets Dept. / City Water or Metro / Fee Exempt Vehicles Navy Vehicles / Residents / Waste Reduction	Dimension: _____ in. X _____ in. X _____ in.	Net Weight: _____
---	---	---	---	--------------------------

<input type="checkbox"/> Paper: _____% Uncoated OCC Waxed OCC Paper Bags Newspaper White Ledger Paper Mixed Waste Paper Magazines Phone Books and Directories Compostable/Soiled Paper Aseptic/milk containers R/C Paper % Subtotal (must equal 100%)	<input type="checkbox"/> Metal: _____% Tin/Steel Cans Major Appliances Other Ferrous Metal CRV Aluminum & Tin Cans Non-CRV Aluminum Cans Used Oil Filters Other Non-Ferrous Metal R/C Metal % Subtotal (must equal 100%) <input type="checkbox"/> Plastic: _____% CRV HDPE Containers Non-CRV HDPE Containers CRV PETE Containers Non-CRV PETE Containers Compostable/Biodegradable Miscellaneous Plastic Plastic Grocery and Clean Film Plastic Dirty Film Plastic Durable Plastic Items Expanded Polystyrene R/C Plastic % Subtotal (must equal 100%)	<input type="checkbox"/> Organic: _____% Food Palm, Succulent, Coral Tree Leaves and Grass Prunings and Trimmings Branches and Stumps Agricultural Crop Residues Grass Sod Manures Diapers Textiles R/C Organic % Subtotal (must equal 100%) <input type="checkbox"/> HHW: _____% Oil-Based Paint Water-Based Paint Vehicle and Equipment Fluids Used Oil Lead-Acid Batteries Household Batteries Sharps Pharmaceuticals CFL, Fluorescents and Other Mercury-Containing Items R/C Household Hazardous % Subtotal (must equal 100%)	<input type="checkbox"/> C&D: _____% Concrete Asphalt Paving Asphalt Composition Shingles Roofing Tar Paper/Felt Roofing Mastic Built-Up Roofing Other Asphalt Roofing Clean Dimensional Lumber Clean Engineered Wood Clean Pallets and Crates Other Wood Waste Clean Gypsum Board Painted/Demolition Gypsum Carpet & Carpet Padding Rock, Soil, and Fines Contaminated soil, street R/C C&D % Subtotal (must equal 100%)	<input type="checkbox"/> Special Waste: _____% Ash Sewage Solids Industrial Sludge Treated Medical Waste Bulky Items Tires R/C Special Waste % Subtotal (must equal 100%) <input type="checkbox"/> Electronics: _____% Brown Goods CRT Computer-Related Electronics Other Consumer Electronics CRT devices) % Subtotal (must equal 100%) <input type="checkbox"/> Mixed Residue/MSW: _____% Mixed Residue % Subtotal (must equal 100%)
---	--	--	---	--

<input type="checkbox"/> Glass: _____% CRV Clear Bottles Non-CRV Clear Bottles and CRV Brown Bottles Non-CRV Brown Bottles and CRV Other Colored Bottles Non-CRV & Other Colored Flat Glass R/C Glass % Subtotal (must equal 100%)	Grand Total: _____% (Must equal 100%)
---	---

Notes:

Figure 73. Example Green Waste Sample Tally Sheet

2012 San Diego Waste Composition Study Green Waste Service Sample Tally Sheet

Date: _____
Sample ID: _____

Load Net Weight: _____
Route #: _____
Load #: _____

	Weight A	Weight B	Weight C	Weight D
Compostables				
Acceptable compostables				
Minor Contaminants				
Paper contaminants				
Recyclable paper and paper cartons				
Waxed/coated cardboard				
Other paper				
Plastic contaminants				
Recyclable plastic bottles				
Recyclable durable containers				
Film plastic				
Plastic chemical bottles				
Other plastic				
Metal contaminants				
CRV cans				
Other metal				
Major Contaminants				
Glass & Ceramic				
Recyclable glass				
Ceramic, terra cotta, pottery				
Other Glass				
Non-compostable organics				
Diapers				
Textiles				
Painted/treated wood				
Pet waste				
Animal carcasses				
Hazardous items				
Oils or vehicle fluids				
Batteries				
Bagged garbage (MSW)				
Large metal appliances & equipment				
Engine parts				
Lawn mowers				
Other Contaminants				
Other Contaminants				

Appendix F: Additional Composition Data

Residential

Franchise and City-collected Residential

Figure 74. Composition by Recoverability Group, Franchise and City-collected Residential, 2012

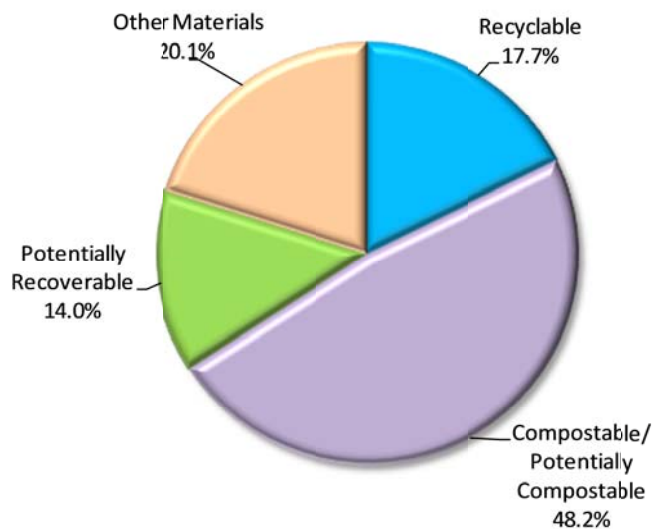


Figure 75. Composition by Material Class, Franchise and City-collected Residential, 2012

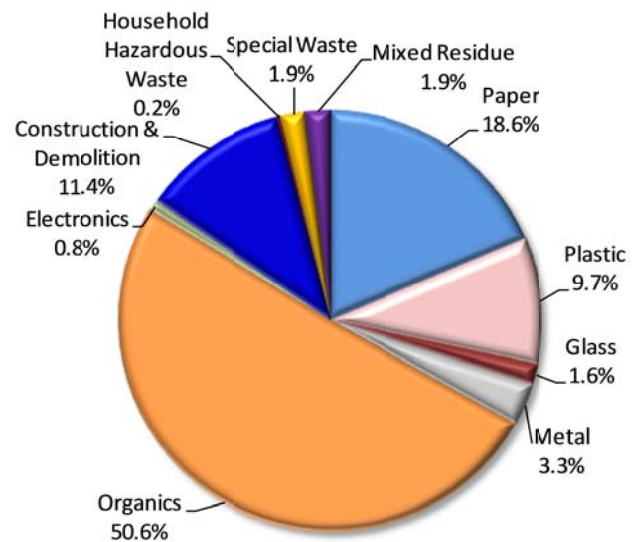


Table 68. Ten Most Prevalent Disposed Materials, Franchise and City-collected Residential, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	19.2%	19.2%	107,194
Leaves and Grass	9.7%	29.0%	54,264
Compostable/Soiled Paper	6.5%	35.4%	36,069
Palm, Succulent, Coral Tree	5.9%	41.3%	32,796
Prunings and Trimmings	5.1%	46.4%	28,151
Textiles	4.2%	50.6%	23,243
Uncoated Corrugated Cardboard	3.9%	54.5%	21,883
Mixed Waste Paper	3.6%	58.1%	20,209
Diapers	3.6%	61.7%	19,901
Other Wood Waste	3.4%	65.1%	18,820
Subtotal	65.1%		362,530
All other material types	34.9%		194,733
Total	100.0%		557,262

Figure 76. Seasonal Composition by Material Class, Franchise and City-collected Residential, 2012

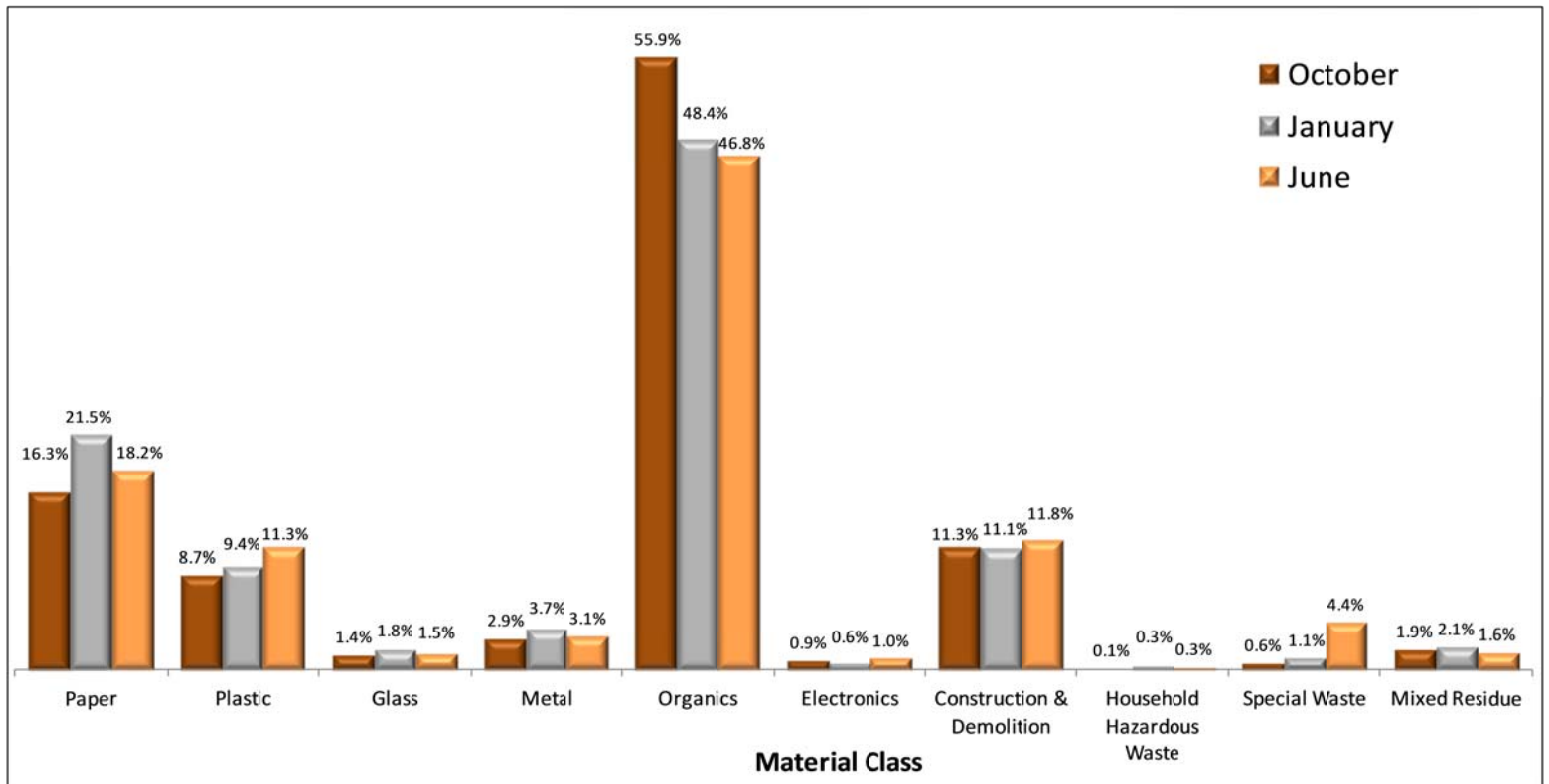


Table 69. Detailed Waste Composition, Franchise and City-collected Residential, 2012

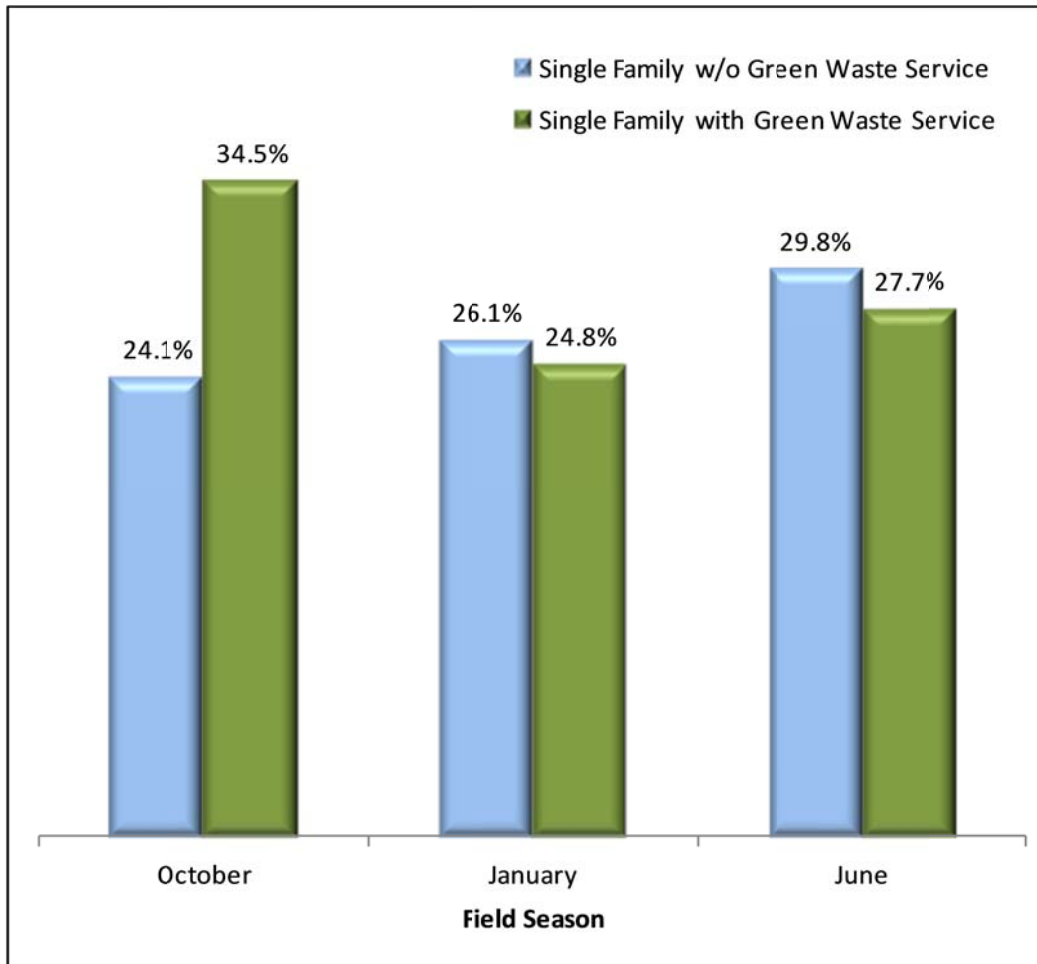
Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	18.6%		103,806	Electronics	0.8%		4,565
Uncoated Corrugated Cardboard	3.9%	0.5%	21,883	Brown Goods	0.5%	0.3%	2,554
Waxed Corrugated Cardboard	0.1%	0.1%	543	CRT	0.1%	0.1%	597
Paper Bags	0.4%	0.1%	2,157	Computer-Related Electronics	0.0%	0.0%	145
Newspaper	1.3%	0.2%	7,190	Other Consumer Electronics	0.2%	0.1%	1,025
White Ledger Paper	0.8%	0.1%	4,432	Video Display Devices (non-CRT devices)	0.0%	0.1%	245
Mixed Waste Paper	3.6%	0.2%	20,209				
Magazines	0.8%	0.2%	4,607	Construction & Demolition	11.4%		63,319
Phone Books and Directories	0.1%	0.1%	351	Concrete	0.9%	0.5%	5,166
Compostable/Soiled Paper	6.5%	0.4%	36,069	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.0%	846	Asphalt Composition Shingles	0.1%	0.1%	741
Remainder/Composite Paper	1.0%	0.2%	5,521	Roofing Tar Paper/Felt	0.0%	0.0%	135
				Roofing Mastic	0.0%	0.0%	0
Plastic	9.7%		54,007	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	137	Other Asphalt Roofing Material	0.0%	0.0%	226
Non-CRV HDPE Containers	0.6%	0.1%	3,373	Clean Dimensional Lumber	0.5%	0.2%	2,604
CRV PETE Containers	0.3%	0.0%	1,514	Clean Engineered Wood	0.4%	0.2%	2,428
Non-CRV PETE Containers	0.4%	0.0%	2,005	Clean Pallets and Crates	0.3%	0.3%	1,830
Compostable Biodegradable Plastic Containers	0.0%	0.0%	43	Other Wood Waste	3.4%	0.6%	18,820
Miscellaneous Plastic Containers	0.7%	0.1%	4,120	Clean Gypsum Board	0.4%	0.3%	1,982
Plastic Grocery and Merchandise Bags	0.4%	0.0%	2,410	Painted/Demolition Gypsum Board	0.5%	0.3%	2,544
Clean Film Plastic	0.3%	0.1%	1,590	Carpet & Carpet Padding	2.0%	0.7%	11,141
Dirty Film Plastic	2.9%	0.2%	15,971	Rock, Soil and Fines	0.9%	0.4%	5,272
Durable Plastic Items	2.5%	0.4%	14,176	Contaminated Soil, Street Sweepings, Drain Cleaning	0.1%	0.2%	791
Expanded Polystyrene	0.5%	0.0%	2,953	Remainder/Composite C&D	1.7%	0.5%	9,637
Remainder/Composite Plastic	1.0%	0.2%	5,716				
				Household Hazardous Waste	0.2%		1,290
Glass	1.6%		8,777	Oil-Based Paint	0.0%	0.0%	185
CRV Clear Glass Bottles	0.2%	0.0%	1,203	Water-Based Paint	0.0%	0.1%	247
Non-CRV Clear Glass Bottles and Containers	0.5%	0.1%	2,587	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.3%	0.1%	1,403	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	263	Lead-Acid Batteries	0.0%	0.1%	270
CRV Other Colored Glass Bottles	0.1%	0.0%	425	Household Batteries	0.0%	0.0%	109
Non-CRV other Colored Glass Bottles and Containers	0.3%	0.1%	1,399	Sharps	0.0%	0.0%	10
Flat Glass	0.0%	0.0%	71	Pharmaceuticals	0.0%	0.0%	93
Remainder/Composite Glass	0.3%	0.1%	1,426	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	8
				Remainder/Composite Household Hazardous	0.1%	0.1%	367
Metal	3.3%		18,114				
Tin/Steel Cans	0.6%	0.1%	3,574	Special Waste	1.9%		10,580
Major Appliances	0.0%	0.0%	67	Ash	0.0%	0.0%	33
Other Ferrous Metal	1.1%	0.3%	5,951	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.1%	1,038	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	233	Treated Medical Waste	0.0%	0.0%	29
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.5%	0.5%	8,265
Other Non-Ferrous Metal	0.4%	0.1%	2,010	Tire	0.3%	0.2%	1,760
Remainder/Composite Metal	0.9%	0.2%	5,242	Remainder/Composite Special Waste	0.1%	0.1%	493
Organics	50.6%		282,180	Mixed Residue	1.9%		10,624
Food	19.2%	1.2%	107,194	Mixed Residue	1.9%	0.4%	10,624
Palm, Succulent, Coral Tree	5.9%	0.8%	32,796				
Leaves and Grass	9.7%	1.2%	54,264	Total	100.0%		557,262
Prunings and Trimmings	5.1%	0.9%	28,151	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.8%	0.3%	4,335	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.1%	0.1%	454	Total Including Residuals			557,262
Manures	0.0%	0.0%	237				
Diapers	3.6%	0.5%	19,901	Sample Count			274
Textiles	4.2%	0.5%	23,243				
Remainder/Composite Organics	2.1%	0.3%	11,606				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

City-collected Single Family

Additional city-collected single family composition data can be found beginning on page 33.

Figure 77. Proportion of Green Waste in City-collected Single Family Substream



**Table 70. City-collected Single Family,
Number of Samples with more than 50lbs. Green Waste**

	October	January	June	Total
Single Family w/o Green Waste Service	16	19	20	55
Single Family with Green Waste Service	23	17	18	58
Total	39	36	38	113

City-collected Single Family without Green Waste Service

Figure 78. Composition by Recoverability Group, City-collected Single Family w/o Green Waste Service, 2012

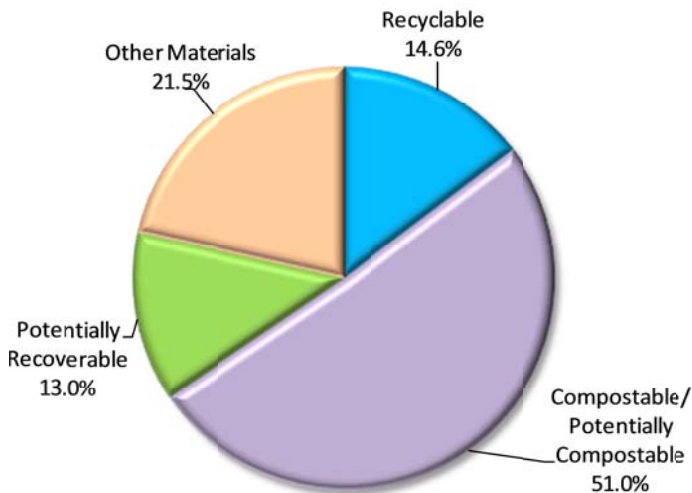


Figure 79. Composition by Material Class, City-collected Single Family w/o Green Waste Service, 2012

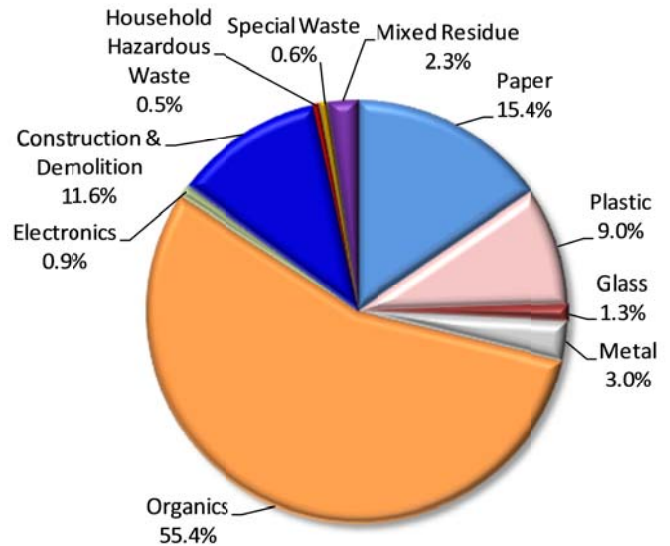


Table 71. Ten Most Prevalent Disposed Materials, City-collected Single Family without Green Waste Service, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	18.5%	18.5%	19,806
Leaves and Grass	11.8%	30.2%	12,610
Palm, Succulent, Coral Tree	7.1%	37.3%	7,664
Prunings and Trimmings	6.9%	44.3%	7,454
Compostable/Soiled Paper	5.5%	49.8%	5,950
Other Wood Waste	4.1%	53.9%	4,359
Textiles	3.9%	57.8%	4,169
Diapers	3.6%	61.4%	3,845
Mixed Waste Paper	3.5%	64.8%	3,730
Remainder/Composite Organics	3.0%	67.8%	3,201
Subtotal	67.8%		72,788
All other material types	32.2%		34,522
Total	100.0%		107,310

Figure 80. Seasonal Composition by Material Class, City-collected Single Family without Green Waste Service, 2012

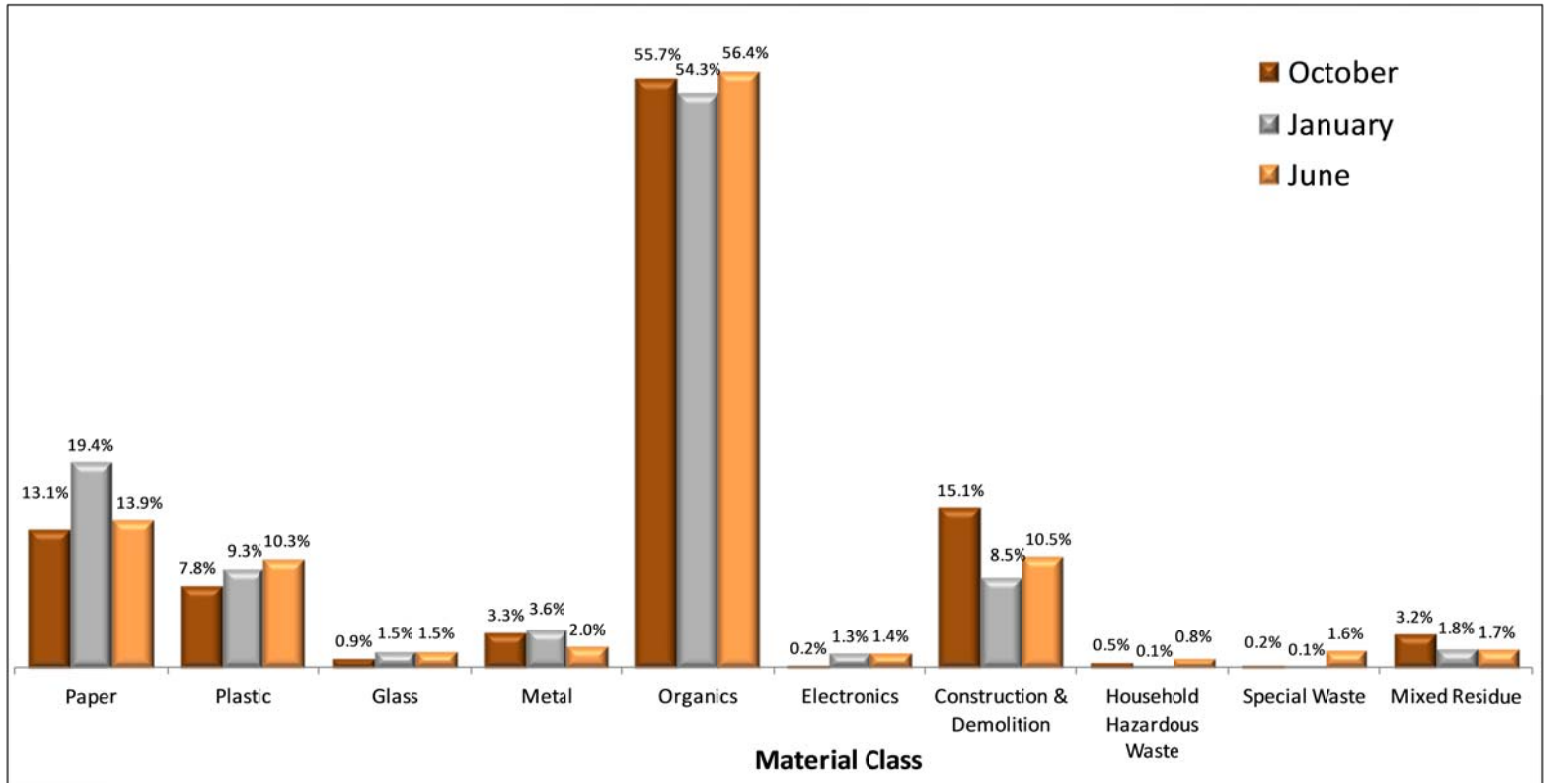
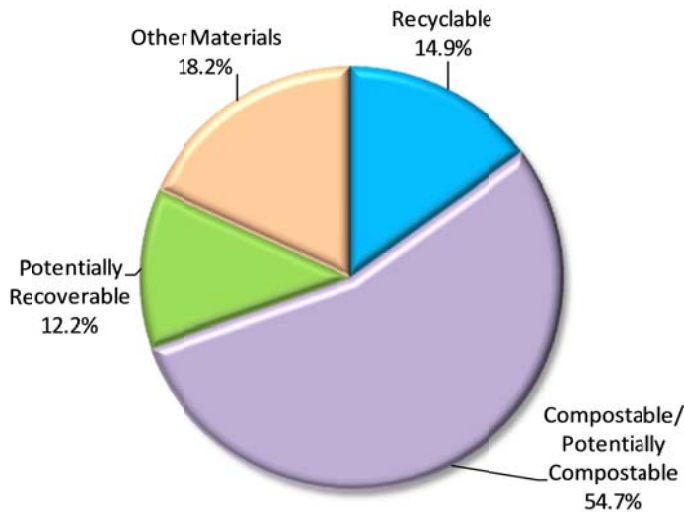
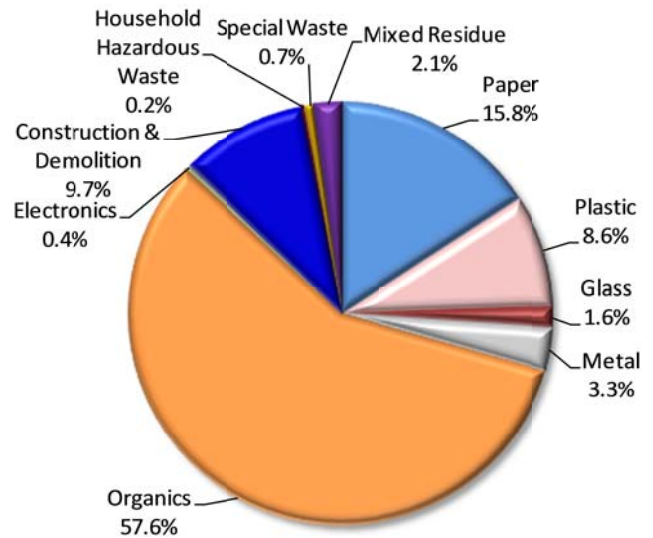


Table 72. Detailed Waste Composition, City-collected Single Family without Green Waste Service, 2012

Material	Estimated		Estimated Tons	Material	Estimated		Estimated Tons
	Percent	+ / -			Percent	+ / -	
Paper	15.4%		16,552	Electronics	0.9%		974
Uncoated Corrugated Cardboard	2.4%	0.6%	2,619	Brown Goods	0.6%	0.4%	616
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.3%	0.1%	295	Computer-Related Electronics	0.0%	0.0%	39
Newspaper	1.5%	0.3%	1,571	Other Consumer Electronics	0.2%	0.1%	171
White Ledger Paper	0.6%	0.2%	611	Video Display Devices (non-CRT devices)	0.1%	0.2%	148
Mixed Waste Paper	3.5%	0.4%	3,730				
Magazines	0.6%	0.2%	653	Construction & Demolition	11.6%		12,404
Phone Books and Directories	0.1%	0.0%	76	Concrete	0.0%	0.0%	26
Compostable/Soiled Paper	5.5%	0.7%	5,950	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.1%	171	Asphalt Composition Shingles	0.5%	0.6%	508
Remainder/Composite Paper	0.8%	0.2%	876	Roofing Tar Paper/Felt	0.1%	0.1%	135
				Roofing Mastic	0.0%	0.0%	0
Plastic	9.0%		9,710	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	16	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.5%	0.1%	570	Clean Dimensional Lumber	0.4%	0.3%	408
CRV PETE Containers	0.2%	0.0%	254	Clean Engineered Wood	1.1%	0.9%	1,142
Non-CRV PETE Containers	0.4%	0.1%	376	Clean Pallets and Crates	0.0%	0.0%	26
Compostable Biodegradable Plastic Containers	0.0%	0.0%	16	Other Wood Waste	4.1%	1.2%	4,359
Miscellaneous Plastic Containers	0.7%	0.1%	772	Clean Gypsum Board	0.5%	0.4%	494
Plastic Grocery and Merchandise Bags	0.5%	0.1%	569	Painted/Demolition Gypsum Board	0.6%	0.7%	634
Clean Film Plastic	0.2%	0.1%	178	Carpet & Carpet Padding	1.5%	0.7%	1,660
Dirty Film Plastic	2.7%	0.2%	2,908	Rock, Soil and Fines	0.9%	0.6%	984
Durable Plastic Items	2.3%	0.6%	2,508	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.5%	0.1%	587	Remainder/Composite C&D	1.9%	0.9%	2,028
Remainder/Composite Plastic	0.9%	0.2%	956				
				Household Hazardous Waste	0.5%		506
Glass	1.3%		1,352	Oil-Based Paint	0.0%	0.0%	21
CRV Clear Glass Bottles	0.1%	0.0%	138	Water-Based Paint	0.2%	0.3%	223
Non-CRV Clear Glass Bottles and Containers	0.3%	0.1%	363	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.2%	0.1%	184	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	48	Lead-Acid Batteries	0.2%	0.3%	201
CRV Other Colored Glass Bottles	0.1%	0.1%	122	Household Batteries	0.0%	0.0%	28
Non-CRV other Colored Glass Bottles and Containers	0.1%	0.1%	153	Sharps	0.0%	0.0%	2
Flat Glass	0.0%	0.0%	27	Pharmaceuticals	0.0%	0.0%	11
Remainder/Composite Glass	0.3%	0.1%	317	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	1
				Remainder/Composite Household Hazardous	0.0%	0.0%	20
Metal	3.0%		3,244				
Tin/Steel Cans	0.6%	0.1%	614	Special Waste	0.6%		626
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	30
Other Ferrous Metal	1.5%	0.8%	1,571	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.0%	121	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	24	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	0.4%	0.5%	470
Other Non-Ferrous Metal	0.3%	0.1%	346	Tire	0.0%	0.0%	32
Remainder/Composite Metal	0.5%	0.2%	568	Remainder/Composite Special Waste	0.1%	0.1%	94
Organics	55.4%		59,490	Mixed Residue	2.3%		2,453
Food	18.5%	1.6%	19,806	Mixed Residue	2.3%	0.7%	2,453
Palm, Succulent, Coral Tree	7.1%	1.8%	7,664				
Leaves and Grass	11.8%	1.9%	12,610	Total	100.0%		107,310
Prunings and Trimmings	6.9%	1.9%	7,454				
Branches and Stumps	0.5%	0.3%	510	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.2%	0.2%	187				
Manures	0.0%	0.1%	45	Total Including Residuals			107,310
Diapers	3.6%	0.5%	3,845				
Textiles	3.9%	0.7%	4,169	Sample Count			91
Remainder/Composite Organics	3.0%	0.7%	3,201				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

City-collected Single Family with Green Waste Service

Figure 81. Composition by Recoverability Group, City-collected Single Family with Green Waste Service, 2012**Figure 82. Composition by Material Class, City-collected Single Family with Green Waste Service, 2012****Table 73. Ten Most Prevalent Disposed Materials, City-collected Single Family with Green Waste Service, 2012**

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	18.5%	18.5%	36,938
Leaves and Grass	12.1%	30.6%	24,115
Palm, Succulent, Coral Tree	9.2%	39.8%	18,241
Prunings and Trimmings	6.5%	46.3%	12,985
Compostable/Soiled Paper	6.4%	52.8%	12,854
Textiles	4.4%	57.1%	8,754
Mixed Waste Paper	3.5%	60.6%	6,926
Diapers	3.2%	63.8%	6,304
Other Wood Waste	2.7%	66.5%	5,366
Dirty Film Plastic	2.7%	69.2%	5,359
Subtotal	69.2%		137,842
All other material types	30.8%		61,449
Total	100.0%		199,291

Figure 83. Seasonal Composition by Material Class, City-collected Single Family with Green Waste Service, 2012

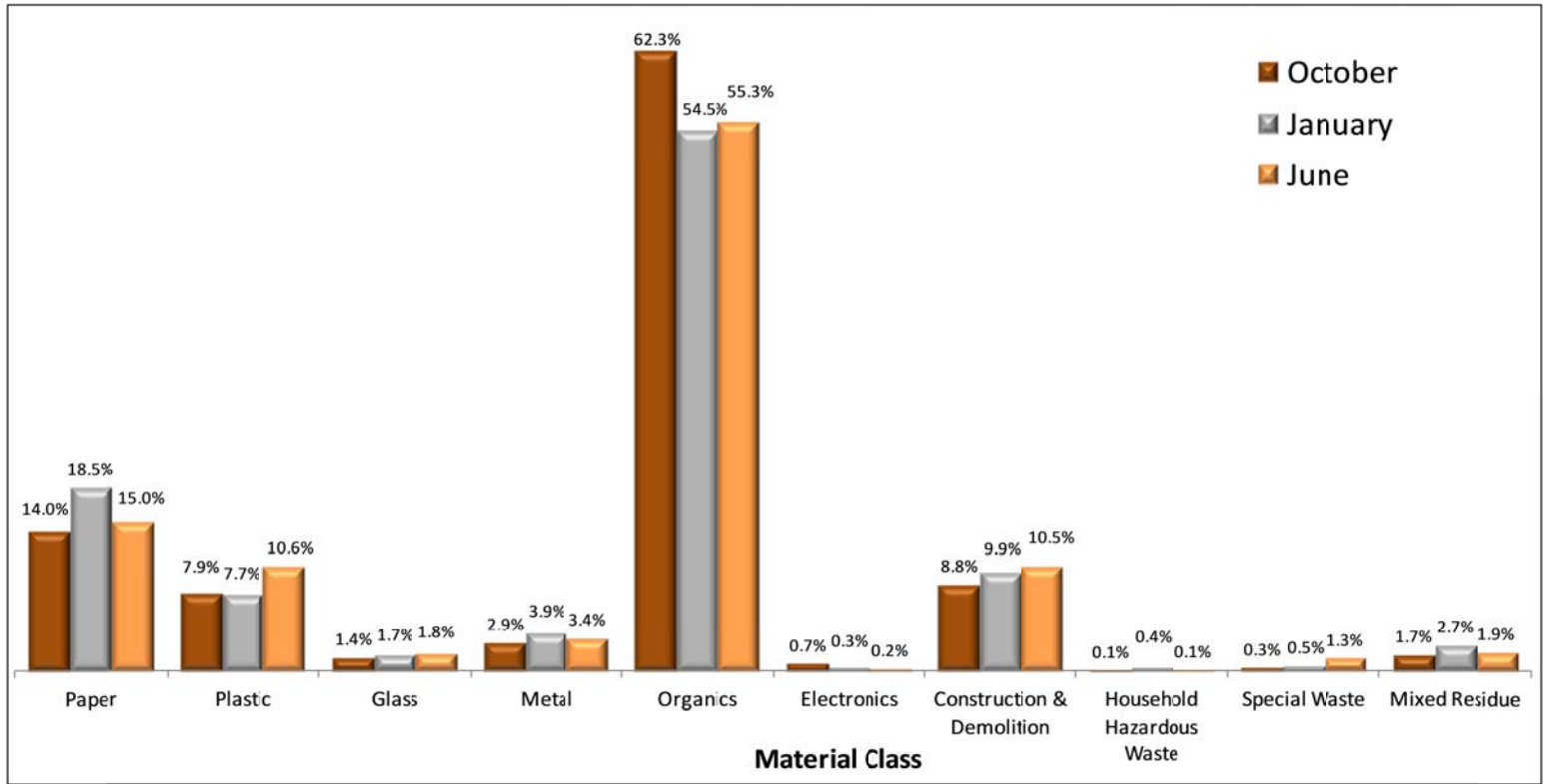


Table 74. Detailed Waste Composition, City-collected Single Family with Green Waste Service, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	15.8%		31,493	Electronics	0.4%		863
Uncoated Corrugated Cardboard	1.9%	0.4%	3,744	Brown Goods	0.3%	0.3%	561
Waxed Corrugated Cardboard	0.0%	0.0%	25	CRT	0.0%	0.0%	0
Paper Bags	0.3%	0.1%	592	Computer-Related Electronics	0.0%	0.1%	74
Newspaper	1.1%	0.2%	2,274	Other Consumer Electronics	0.1%	0.0%	130
White Ledger Paper	0.6%	0.2%	1,227	Video Display Devices (non-CRT devices)	0.0%	0.1%	97
Mixed Waste Paper	3.5%	0.4%	6,926				
Magazines	1.2%	0.6%	2,293	Construction & Demolition	9.7%		19,274
Phone Books and Directories	0.0%	0.0%	20	Concrete	0.8%	0.5%	1,530
Compostable/Soiled Paper	6.4%	0.7%	12,854	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.1%	0.0%	266	Asphalt Composition Shingles	0.1%	0.2%	233
Remainder/Composite Paper	0.6%	0.2%	1,272	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	8.6%		17,235	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	32	Other Asphalt Roofing Material	0.1%	0.1%	120
Non-CRV HDPE Containers	0.4%	0.1%	840	Clean Dimensional Lumber	0.3%	0.2%	604
CRV PETE Containers	0.2%	0.0%	495	Clean Engineered Wood	0.1%	0.1%	298
Non-CRV PETE Containers	0.4%	0.1%	728	Clean Pallets and Crates	0.1%	0.2%	220
Compostable Biodegradable Plastic Containers	0.0%	0.0%	3	Other Wood Waste	2.7%	0.8%	5,366
Miscellaneous Plastic Containers	0.7%	0.1%	1,447	Clean Gypsum Board	0.4%	0.5%	750
Plastic Grocery and Merchandise Bags	0.5%	0.1%	901	Painted/Demolition Gypsum Board	0.4%	0.4%	862
Clean Film Plastic	0.2%	0.0%	319	Carpet & Carpet Padding	1.6%	0.8%	3,182
Dirty Film Plastic	2.7%	0.2%	5,359	Rock, Soil and Fines	1.6%	1.2%	3,153
Durable Plastic Items	2.3%	0.6%	4,577	Contaminated Soil, Street Sweepings, Drain Cleaning	0.1%	0.1%	150
Expanded Polystyrene	0.5%	0.1%	982	Remainder/Composite C&D	1.4%	0.6%	2,807
Remainder/Composite Plastic	0.8%	0.2%	1,554				
				Household Hazardous Waste	0.2%		356
Glass	1.6%		3,172	Oil-Based Paint	0.1%	0.1%	164
CRV Clear Glass Bottles	0.2%	0.1%	406	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.4%	0.1%	851	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.2%	0.1%	485	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.1%	0.0%	107	Lead-Acid Batteries	0.0%	0.1%	69
CRV Other Colored Glass Bottles	0.0%	0.0%	92	Household Batteries	0.0%	0.0%	46
Non-CRV other Colored Glass Bottles and Containers	0.3%	0.1%	581	Sharps	0.0%	0.0%	7
Flat Glass	0.0%	0.0%	6	Pharmaceuticals	0.0%	0.0%	46
Remainder/Composite Glass	0.3%	0.1%	644	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	5
				Remainder/Composite Household Hazardous	0.0%	0.0%	19
Metal	3.3%		6,659				
Tin/Steel Cans	0.7%	0.2%	1,467	Special Waste	0.7%		1,356
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	2
Other Ferrous Metal	1.0%	0.5%	1,952	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.3%	0.2%	531	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	63	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	0.6%	0.5%	1,140
Other Non-Ferrous Metal	0.3%	0.1%	643	Tire	0.0%	0.0%	22
Remainder/Composite Metal	1.0%	0.3%	2,001	Remainder/Composite Special Waste	0.1%	0.1%	192
Organics	57.6%		114,766	Mixed Residue	2.1%		4,116
Food	18.5%	1.6%	36,938	Mixed Residue	2.1%	0.6%	4,116
Palm, Succulent, Coral Tree	9.2%	1.8%	18,241				
Leaves and Grass	12.1%	2.0%	24,115	Total	100.0%		199,291
Prunings and Trimmings	6.5%	1.6%	12,985	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	1.4%	0.8%	2,704	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.1%	0.1%	265	Total Including Residuals			199,291
Manures	0.0%	0.1%	88				
Diapers	3.2%	0.6%	6,304	Sample Count			90
Textiles	4.4%	0.8%	8,754				
Remainder/Composite Organics	2.2%	0.5%	4,371				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Residential

Self-haul Residential Flat Rate Vehicles

Figure 84. Composition by Recoverability Group, Self-haul Residential Flat Rate Vehicles, 2012

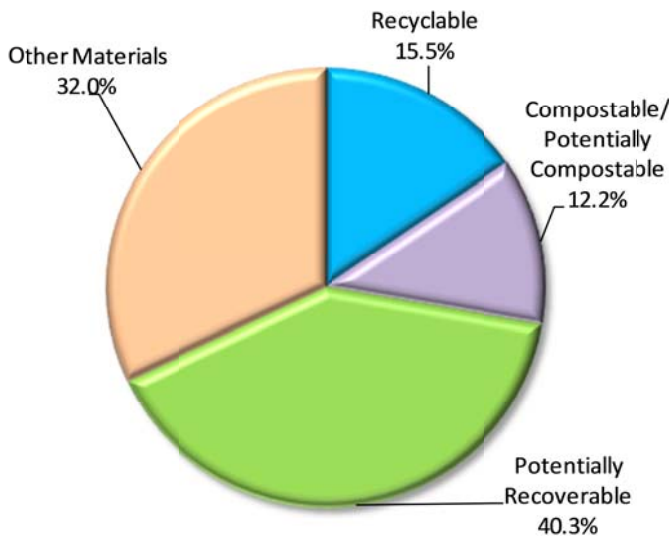


Figure 85. Composition by Material Class, Self-haul Residential Flat Rate Vehicles, 2012

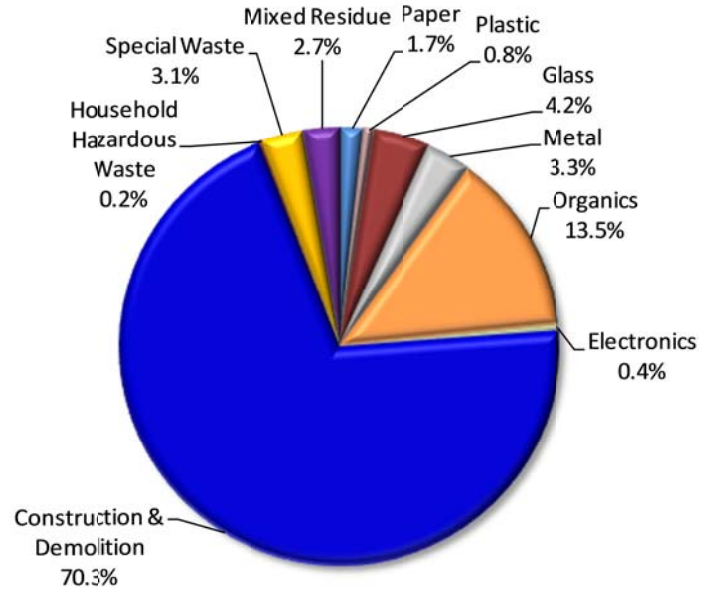


Table 75. Ten Most Prevalent Disposed Materials, Self-haul Residential Flat Rate Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	19.5%	19.5%	6,666
Other Wood Waste	14.5%	34.0%	4,966
Concrete	10.7%	44.7%	3,659
Rock, Soil and Fines	7.9%	52.6%	2,699
Remainder/Composite C&D	6.8%	59.3%	2,321
Textiles	3.7%	63.0%	1,263
Clean Dimensional Lumber	3.1%	66.1%	1,048
Palm, Succulent, Coral Tree	3.0%	69.1%	1,037
Bulky Items	3.0%	72.1%	1,024
Leaves and Grass	2.9%	75.0%	993
Subtotal	75.0%		25,675
All other material types	25.0%		8,555
Total	100.0%		34,230

Table 76. Detailed Waste Composition, Self-haul Residential Flat Rate Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.7%		580	Electronics	0.4%		132
Uncoated Corrugated Cardboard	0.9%	0.5%	322	Brown Goods	0.2%	0.2%	82
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	7	Computer-Related Electronics	0.1%	0.1%	18
Newspaper	0.2%	0.1%	52	Other Consumer Electronics	0.1%	0.1%	31
White Ledger Paper	0.1%	0.1%	33	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.4%	0.2%	137				
Magazines	0.0%	0.0%	5	Construction & Demolition	70.3%		24,054
Phone Books and Directories	0.0%	0.0%	0	Concrete	10.7%	7.8%	3,659
Compostable/Soiled Paper	0.0%	0.0%	2	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	0.1%	0.1%	21	Roofing Tar Paper/Felt	0.3%	0.4%	111
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.8%		267	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	1	Clean Dimensional Lumber	3.1%	2.1%	1,048
CRV PETE Containers	0.0%	0.0%	4	Clean Engineered Wood	2.6%	1.6%	889
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	0.4%	0.3%	145
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	14.5%	7.3%	4,966
Miscellaneous Plastic Containers	0.0%	0.0%	8	Clean Gypsum Board	2.5%	2.4%	855
Plastic Grocery and Merchandise Bags	0.0%	0.0%	1	Painted/Demolition Gypsum Board	2.0%	1.4%	696
Clean Film Plastic	0.1%	0.1%	34	Carpet & Carpet Padding	19.5%	7.6%	6,666
Dirty Film Plastic	0.0%	0.0%	8	Rock, Soil and Fines	7.9%	3.9%	2,699
Durable Plastic Items	0.4%	0.2%	134	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	16	Remainder/Composite C&D	6.8%	3.0%	2,321
Remainder/Composite Plastic	0.2%	0.1%	58				
				Household Hazardous Waste	0.2%		61
Glass	4.2%		1,439	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	9	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	3	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	2.2%	1.8%	747	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	2.0%	1.2%	681	CFL, Fluorescent Tube and Other Mercury-Containing	0.2%	0.2%	61
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	3.3%		1,128				
Tin/Steel Cans	0.0%	0.0%	10	Special Waste	3.1%		1,048
Major Appliances	0.1%	0.1%	26	Ash	0.0%	0.0%	0
Other Ferrous Metal	2.1%	0.9%	712	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	1	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	3.0%	1.2%	1,024
Other Non-Ferrous Metal	0.9%	0.5%	307	Tire	0.1%	0.1%	24
Remainder/Composite Metal	0.2%	0.1%	72	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	13.5%		4,609	Mixed Residue	2.7%		913
Food	0.0%	0.0%	5	Mixed Residue	2.7%	1.6%	913
Palm, Succulent, Coral Tree	3.0%	1.6%	1,037				
Leaves and Grass	2.9%	2.1%	993	Total	100.0%		34,230
Prunings and Trimmings	1.7%	1.5%	588	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.3%	0.3%	98	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.8%	0.9%	275	Total Including Residuals			34,230
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	0	Sample Count			133
Textiles	3.7%	1.9%	1,263				
Remainder/Composite Organics	1.0%	0.7%	350				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Residential Small Vehicles

Figure 86. Composition by Recoverability Group, Self-haul Residential Small Vehicles, 2012

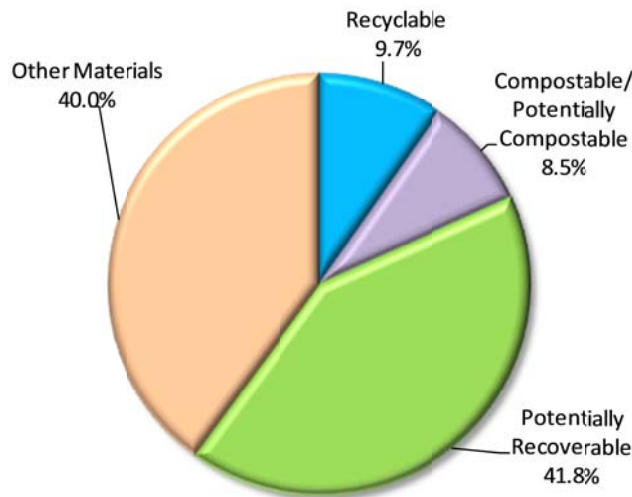


Figure 87. Composition by Material Class, Self-haul Residential Small Vehicles, 2012

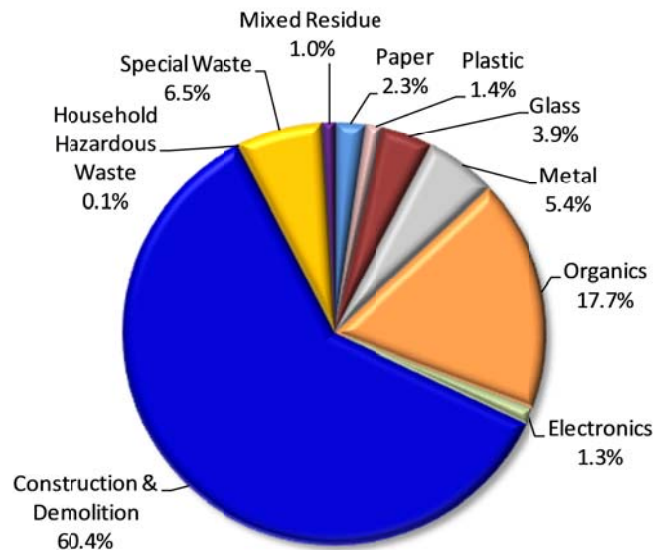


Table 77. Ten Most Prevalent Disposed Materials, Self-haul Residential Small Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Other Wood Waste	19.2%	19.2%	1,184
Carpet & Carpet Padding	11.9%	31.2%	734
Textiles	9.0%	40.2%	554
Rock, Soil and Fines	8.7%	48.9%	535
Remainder/Composite C&D	8.4%	57.3%	517
Bulky Items	6.5%	63.8%	400
Concrete	4.6%	68.3%	281
Palm, Succulent, Coral Tree	4.2%	72.5%	256
Flat Glass	3.1%	75.6%	190
Remainder/Composite Metal	2.6%	78.2%	159
Subtotal	78.2%		4,810
All other material types	21.8%		1,342
Total	100.0%		6,153

Table 78. Detailed Waste Composition, Self-haul Residential Small Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.3%		143	Electronics	1.3%		80
Uncoated Corrugated Cardboard	0.8%	0.6%	49	Brown Goods	1.1%	1.6%	67
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.1%	0.1%	6	Computer-Related Electronics	0.2%	0.4%	14
Newspaper	0.0%	0.1%	2	Other Consumer Electronics	0.0%	0.0%	0
White Ledger Paper	0.0%	0.0%	0	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	1.2%	0.6%	73				
Magazines	0.2%	0.2%	10	Construction & Demolition	60.4%		3,719
Phone Books and Directories	0.0%	0.0%	0	Concrete	4.6%	4.8%	281
Compostable/Soiled Paper	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.5%	0.7%	28
Remainder/Composite Paper	0.1%	0.1%	4	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	1.4%		86	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	1.3%	1.1%	81
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	1.5%	1.4%	95
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	0.3%	0.4%	17
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	19.2%	7.8%	1,184
Miscellaneous Plastic Containers	0.0%	0.0%	0	Clean Gypsum Board	1.6%	1.8%	97
Plastic Grocery and Merchandise Bags	0.0%	0.0%	1	Painted/Demolition Gypsum Board	2.4%	2.8%	149
Clean Film Plastic	0.1%	0.1%	4	Carpet & Carpet Padding	11.9%	9.2%	734
Dirty Film Plastic	0.0%	0.0%	1	Rock, Soil and Fines	8.7%	13.7%	535
Durable Plastic Items	0.7%	0.6%	44	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.1%	0.1%	4	Remainder/Composite C&D	8.4%	6.1%	517
Remainder/Composite Plastic	0.5%	0.6%	32				
				Household Hazardous Waste	0.1%		5
Glass	3.9%		240	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	1	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	2	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	3.1%	3.0%	190	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.8%	1.0%	46	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	1
				Remainder/Composite Household Hazardous	0.1%	0.1%	4
Metal	5.4%		330				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	6.5%		400
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.8%	1.4%	114	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.2%	8	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	6.5%	4.7%	400
Other Non-Ferrous Metal	0.8%	0.5%	50	Tire	0.0%	0.0%	0
Remainder/Composite Metal	2.6%	3.5%	159	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	17.7%		1,092	Mixed Residue	1.0%		60
Food	0.0%	0.0%	0	Mixed Residue	1.0%	1.6%	60
Palm, Succulent, Coral Tree	4.2%	4.5%	256				
Leaves and Grass	1.9%	1.8%	118	Total	100.0%		6,153
Prunings and Trimmings	0.5%	0.4%	29	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.4%	0.3%	22	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			6,153
Manures	0.0%	0.0%	0				
Diapers	0.1%	0.2%	8	Sample Count			29
Textiles	9.0%	7.4%	554				
Remainder/Composite Organics	1.7%	1.6%	103				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Residential Large Vehicles

Figure 88. Composition by Recoverability Group, Self-Haul Residential Large Vehicles, 2012

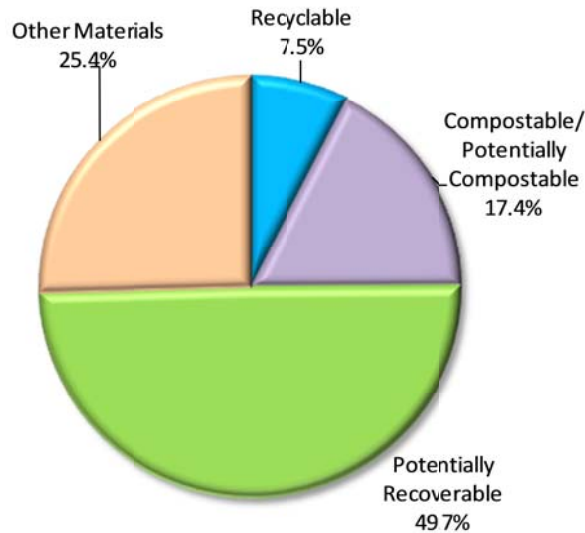


Figure 89. Composition by Material Class, Self-haul Residential Large Vehicles, 2012

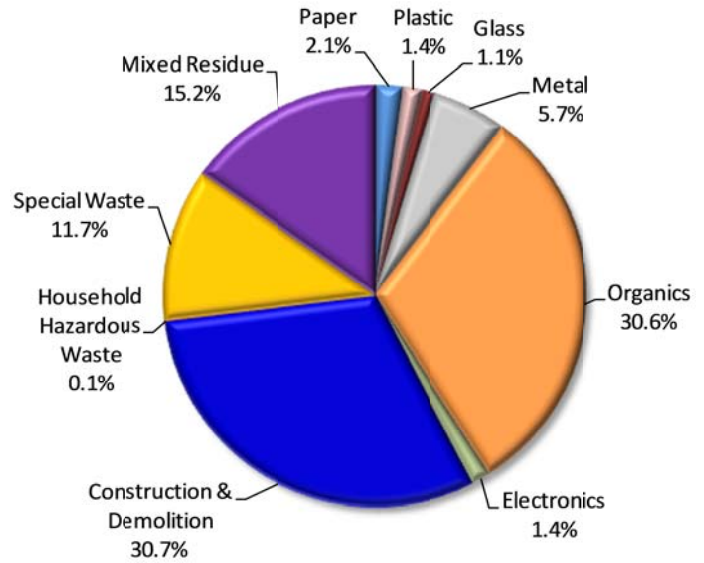


Table 79. Ten Most Prevalent Disposed Materials, Self-haul Residential Large Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Leaves and Grass	15.5%	15.5%	312
Mixed Residue	15.2%	30.7%	305
Carpet & Carpet Padding	13.8%	44.6%	278
Textiles	12.9%	57.4%	259
Bulky Items	11.7%	69.1%	235
Clean Gypsum Board	6.7%	75.8%	134
Other Wood Waste	5.5%	81.3%	110
Other Non-Ferrous Metal	3.5%	84.8%	71
Other Ferrous Metal	2.1%	86.9%	41
Remainder/Composite C&D	1.3%	88.2%	27
Subtotal	88.2%		1,771
All other material types	11.8%		236
Total	100.0%		2,008

Table 80. Detailed Waste Composition, Self-haul Residential Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.1%		42	Electronics	1.4%		29
Uncoated Corrugated Cardboard	0.4%	0.3%	9	Brown Goods	0.6%	1.0%	11
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	0	Computer-Related Electronics	0.1%	0.2%	2
Newspaper	0.0%	0.0%	0	Other Consumer Electronics	0.2%	0.4%	5
White Ledger Paper	0.1%	0.1%	2	Video Display Devices (non-CRT devices)	0.5%	0.9%	10
Mixed Waste Paper	1.1%	1.3%	22				
Magazines	0.1%	0.1%	1	Construction & Demolition	30.7%		616
Phone Books and Directories	0.1%	0.1%	2	Concrete	0.0%	0.0%	0
Compostable/Soiled Paper	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	0.3%	0.6%	7	Roofing Tar Paper/Felt	0.2%	0.4%	4
				Roofing Mastic	0.0%	0.0%	0
Plastic	1.4%		29	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.4%	0.6%	8
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	0.6%	0.6%	12
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	0.9%	1.5%	19
Non-CRV PETE Containers	0.0%	0.1%	1	Clean Pallets and Crates	0.2%	0.2%	3
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	5.5%	5.2%	110
Miscellaneous Plastic Containers	0.1%	0.1%	2	Clean Gypsum Board	6.7%	11.1%	134
Plastic Grocery and Merchandise Bags	0.0%	0.0%	0	Painted/Demolition Gypsum Board	0.0%	0.0%	0
Clean Film Plastic	0.0%	0.0%	0	Carpet & Carpet Padding	13.8%	18.3%	278
Dirty Film Plastic	0.0%	0.0%	0	Rock, Soil and Fines	1.1%	1.8%	22
Durable Plastic Items	1.1%	0.6%	22	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	0	Remainder/Composite C&D	1.3%	2.2%	27
Remainder/Composite Plastic	0.2%	0.2%	3				
				Household Hazardous Waste	0.1%		1
Glass	1.1%		22	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.4%	0.5%	8	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.7%	1.2%	14	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.1%	0.1%	1
Metal	5.7%		114				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	11.7%		235
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	2.1%	1.9%	41	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	0	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	11.7%	7.7%	235
Other Non-Ferrous Metal	3.5%	1.8%	71	Tire	0.0%	0.0%	0
Remainder/Composite Metal	0.1%	0.1%	2	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	30.6%		614	Mixed Residue	15.2%		305
Food	0.2%	0.4%	4	Mixed Residue	15.2%	20.3%	305
Palm, Succulent, Coral Tree	0.9%	1.3%	18				
Leaves and Grass	15.5%	12.1%	312	Total	100.0%		2,008
Prunings and Trimmings	0.0%	0.0%	0	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.0%	0.0%	0	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			2,008
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	0	Sample Count			15
Textiles	12.9%	8.8%	259				
Remainder/Composite Organics	1.0%	1.2%	21				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Commercial

Franchise-collected Commercial

Franchise-collected Commercial Packer Trucks

Figure 90. Composition by Recoverability Group, Franchise-collected Commercial Packer, 2012

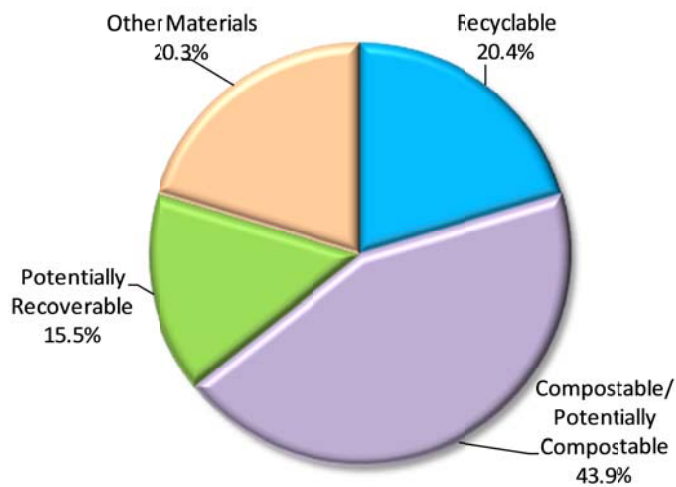


Figure 91. Composition by Material Class, Franchise-collected Commercial Packer, 2012

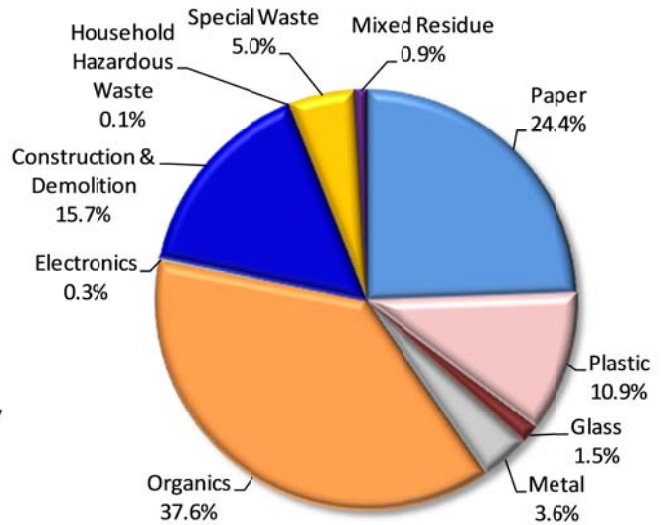


Table 81. Ten Most Prevalent Disposed Materials, Franchise-collected Commercial Packer, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	21.4%	21.4%	48,054
Compostable/Soiled Paper	7.7%	29.0%	17,253
Uncoated Corrugated Cardboard	6.8%	35.8%	15,358
Leaves and Grass	5.0%	40.8%	11,153
Other Wood Waste	4.0%	44.8%	9,026
Carpet & Carpet Padding	3.9%	48.7%	8,794
Dirty Film Plastic	3.6%	52.3%	8,134
Mixed Waste Paper	3.4%	55.7%	7,669
Clean Pallets and Crates	2.7%	58.4%	6,101
Textiles	2.6%	61.0%	5,842
Subtotal	61.0%		137,383
All other material types	39.0%		87,693
Total	100.0%		225,076

Figure 92. Seasonal Composition by Material Class, Franchise-collected Commercial Packer, 2012

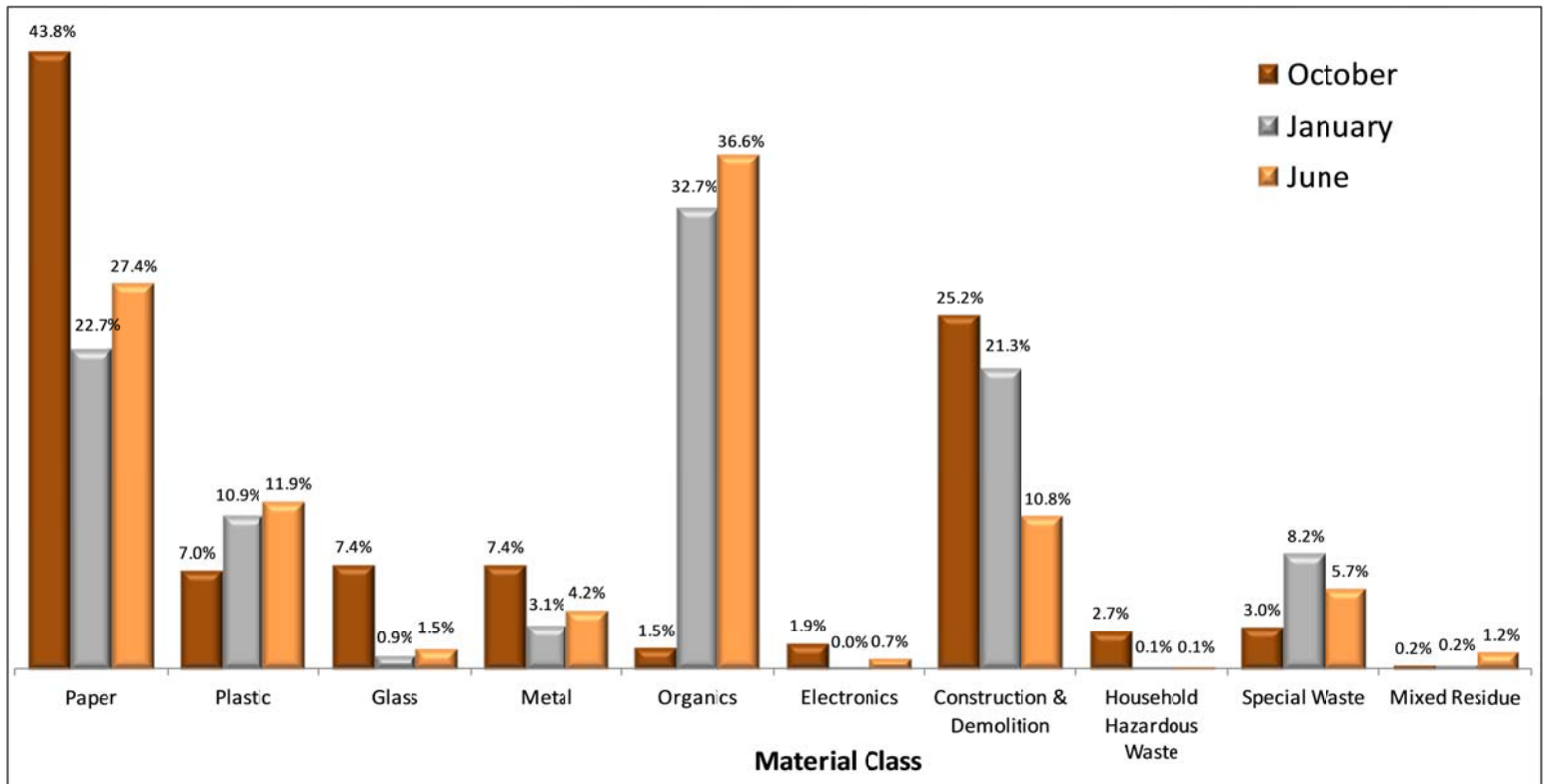


Table 82. Detailed Waste Composition, Franchise-collected Commercial Packer, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	24.4%		54,961	Electronics	0.3%		567
Uncoated Corrugated Cardboard	6.8%	0.9%	15,358	Brown Goods	0.2%	0.2%	365
Waxed Corrugated Cardboard	0.8%	0.6%	1,872	CRT	0.0%	0.0%	0
Paper Bags	0.4%	0.2%	905	Computer-Related Electronics	0.0%	0.0%	90
Newspaper	0.8%	0.2%	1,834	Other Consumer Electronics	0.0%	0.1%	112
White Ledger Paper	2.1%	0.6%	4,817	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	3.4%	0.5%	7,669				
Magazines	0.7%	0.2%	1,526	Construction & Demolition	15.7%		35,390
Phone Books and Directories	0.0%	0.0%	65	Concrete	0.3%	0.4%	726
Compostable/Soiled Paper	7.7%	0.9%	17,253	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.1%	521	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	1.4%	0.4%	3,142	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	10.9%		24,566	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	70	Other Asphalt Roofing Material	0.0%	0.0%	6
Non-CRV HDPE Containers	0.5%	0.1%	1,214	Clean Dimensional Lumber	0.5%	0.2%	1,031
CRV PETE Containers	0.3%	0.1%	701	Clean Engineered Wood	0.3%	0.2%	591
Non-CRV PETE Containers	0.2%	0.0%	451	Clean Pallets and Crates	2.7%	1.1%	6,101
Compostable Biodegradable Plastic Containers	0.0%	0.0%	37	Other Wood Waste	4.0%	1.6%	9,026
Miscellaneous Plastic Containers	0.9%	0.1%	1,951	Clean Gypsum Board	0.2%	0.3%	527
Plastic Grocery and Merchandise Bags	0.2%	0.0%	515	Painted/Demolition Gypsum Board	1.0%	1.1%	2,272
Clean Film Plastic	0.6%	0.2%	1,339	Carpet & Carpet Padding	3.9%	1.9%	8,794
Dirty Film Plastic	3.6%	0.5%	8,134	Rock, Soil and Fines	0.7%	0.4%	1,503
Durable Plastic Items	2.4%	0.7%	5,414	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	16
Expanded Polystyrene	0.5%	0.1%	1,233	Remainder/Composite C&D	2.1%	0.8%	4,798
Remainder/Composite Plastic	1.6%	0.5%	3,508				
				Household Hazardous Waste	0.1%		161
Glass	1.5%		3,291	Oil-Based Paint	0.0%	0.0%	51
CRV Clear Glass Bottles	0.3%	0.1%	616	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.2%	0.1%	373	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.2%	0.1%	492	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	83	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.1%	265	Household Batteries	0.0%	0.0%	26
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.1%	492	Sharps	0.0%	0.0%	1
Flat Glass	0.1%	0.1%	133	Pharmaceuticals	0.0%	0.0%	22
Remainder/Composite Glass	0.4%	0.3%	837	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	14
				Remainder/Composite Household Hazardous	0.0%	0.0%	48
Metal	3.6%		8,194				
Tin/Steel Cans	0.5%	0.2%	1,147	Special Waste	5.0%		11,314
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.2%	0.5%	2,600	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.1%	0.0%	277	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	40	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.9%	0.9%	4,248
Other Non-Ferrous Metal	0.7%	0.4%	1,627	Tire	2.4%	1.7%	5,504
Remainder/Composite Metal	1.1%	0.4%	2,502	Remainder/Composite Special Waste	0.7%	0.5%	1,563
Organics	37.6%		84,565	Mixed Residue	0.9%		2,065
Food	21.4%	2.5%	48,054	Mixed Residue	0.9%	0.5%	2,065
Palm, Succulent, Coral Tree	2.5%	1.3%	5,579				
Leaves and Grass	5.0%	1.4%	11,153	Total	100.0%		225,076
Prunings and Trimmings	2.4%	0.9%	5,425	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.9%	0.7%	1,990	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			225,076
Manures	0.1%	0.2%	207				
Diapers	1.3%	0.6%	3,019	Sample Count			126
Textiles	2.6%	0.5%	5,842				
Remainder/Composite Organics	1.5%	0.6%	3,297				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Franchise-collected Commercial Open-top Drag-on Containers

Figure 93. Composition by Recoverability Group, Franchise-collected Commercial Open-top Drag-on, 2012

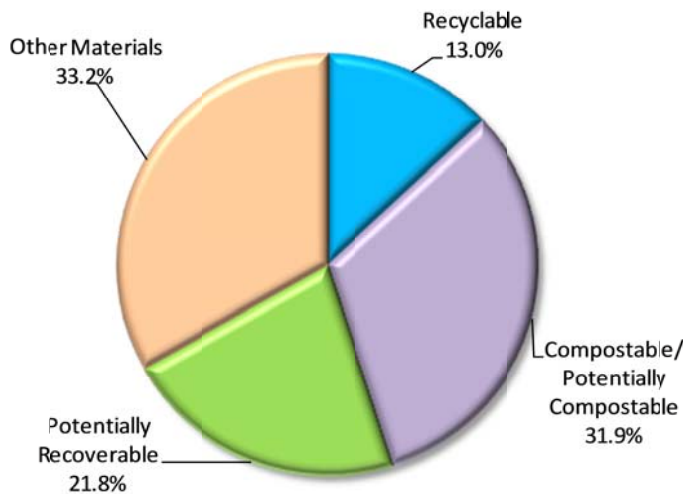


Figure 94. Composition by Material Class, Franchise-collected Commercial Open-top Drag-on, 2012

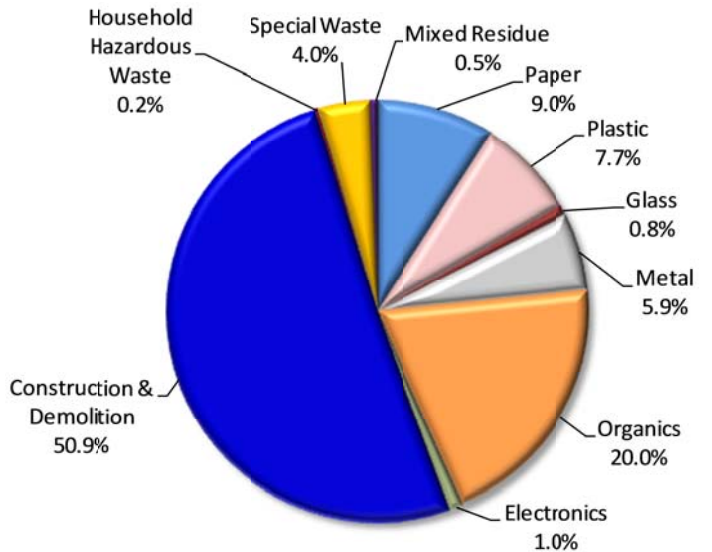


Table 83. Ten Most Prevalent Disposed Materials, Franchise-collected Commercial Open-top Drag-on, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Remainder/Composite C&D	11.3%	11.3%	14,496
Other Wood Waste	9.5%	20.8%	12,262
Clean Pallets and Crates	9.4%	30.3%	12,131
Leaves and Grass	5.9%	36.1%	7,555
Uncoated Corrugated Cardboard	4.8%	40.9%	6,144
Clean Dimensional Lumber	4.2%	45.1%	5,416
Food	4.0%	49.1%	5,138
Bulky Items	4.0%	53.1%	5,081
Prunings and Trimmings	3.9%	57.0%	5,014
Carpet & Carpet Padding	3.2%	60.2%	4,112
Subtotal	60.2%		77,349
All other material types	39.8%		51,180
Total	100.0%		128,529

Figure 95. Seasonal Composition by Material Class, Franchise-collected Commercial Open-top Drag-on, 2012

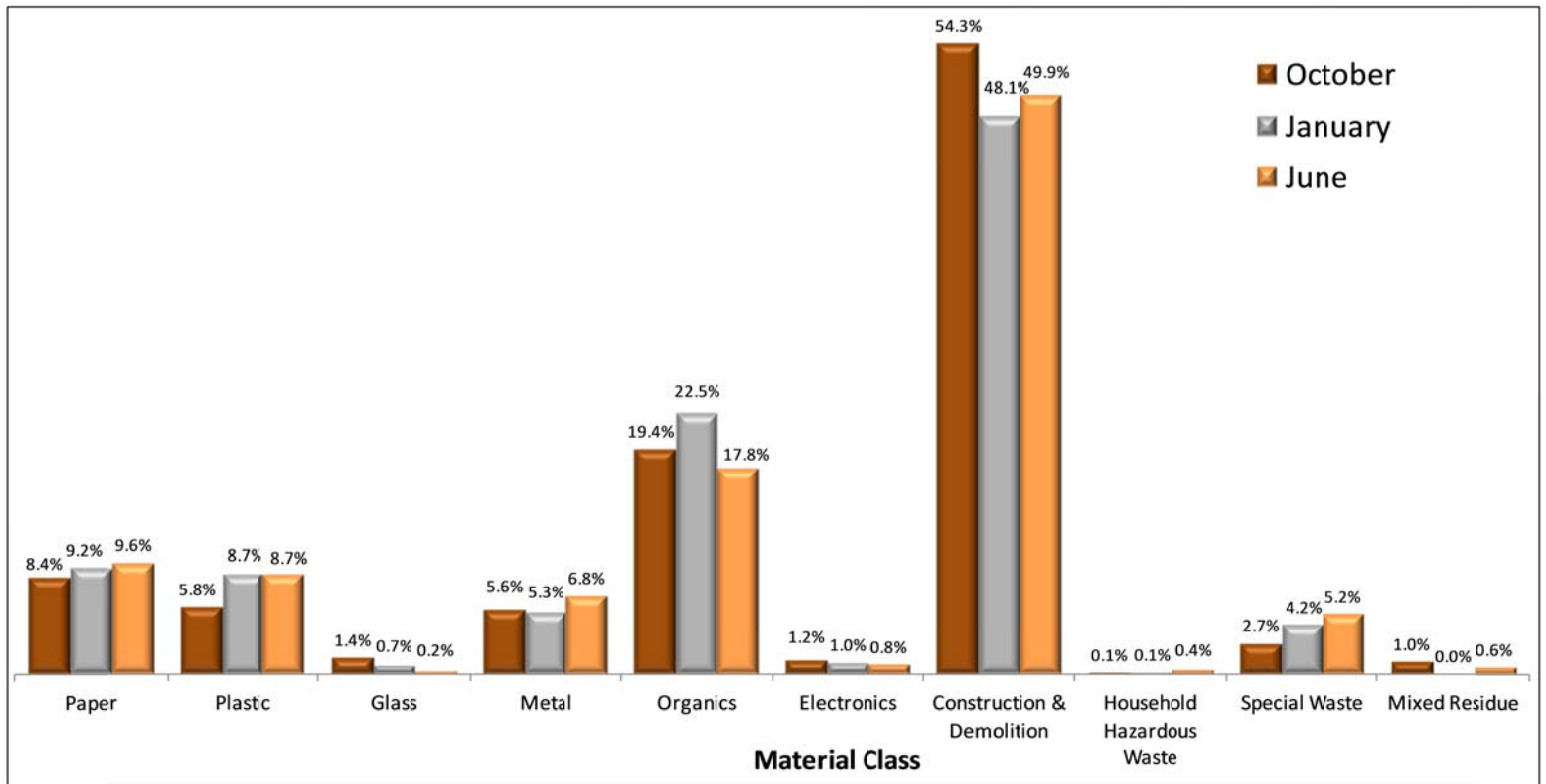


Table 84. Detailed Waste Composition, Franchise-collected Commercial Open-top Drag-on, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	9.0%		11,597	Electronics	1.0%		1,307
Uncoated Corrugated Cardboard	4.8%	1.7%	6,144	Brown Goods	0.5%	0.4%	639
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.1%	0.0%	99	Computer-Related Electronics	0.0%	0.0%	28
Newspaper	0.1%	0.1%	137	Other Consumer Electronics	0.1%	0.1%	92
White Ledger Paper	0.3%	0.2%	390	Video Display Devices (non-CRT devices)	0.4%	0.7%	548
Mixed Waste Paper	0.9%	0.3%	1,153				
Magazines	0.0%	0.0%	49	Construction & Demolition	50.9%		65,365
Phone Books and Directories	0.0%	0.0%	0	Concrete	2.0%	1.6%	2,600
Compostable/Soiled Paper	1.7%	0.8%	2,157	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	13	Asphalt Composition Shingles	0.2%	0.2%	204
Remainder/Composite Paper	1.1%	0.5%	1,454	Roofing Tar Paper/Felt	0.6%	1.0%	784
				Roofing Mastic	0.0%	0.0%	0
Plastic	7.7%		9,878	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	1	Other Asphalt Roofing Material	0.1%	0.1%	94
Non-CRV HDPE Containers	0.1%	0.1%	143	Clean Dimensional Lumber	4.2%	1.5%	5,416
CRV PETE Containers	0.1%	0.0%	69	Clean Engineered Wood	3.1%	1.1%	4,003
Non-CRV PETE Containers	0.0%	0.0%	39	Clean Pallets and Crates	9.4%	3.2%	12,131
Compostable Biodegradable Plastic Containers	0.0%	0.0%	3	Other Wood Waste	9.5%	2.4%	12,262
Miscellaneous Plastic Containers	0.1%	0.1%	178	Clean Gypsum Board	1.3%	1.3%	1,708
Plastic Grocery and Merchandise Bags	0.0%	0.0%	42	Painted/Demolition Gypsum Board	2.8%	1.4%	3,606
Clean Film Plastic	0.9%	0.5%	1,217	Carpet & Carpet Padding	3.2%	1.9%	4,112
Dirty Film Plastic	1.3%	0.5%	1,694	Rock, Soil and Fines	2.9%	1.8%	3,698
Durable Plastic Items	2.9%	1.0%	3,670	Contaminated Soil, Street Sweepings, Drain Cleaning	0.2%	0.2%	252
Expanded Polystyrene	0.5%	0.3%	669	Remainder/Composite C&D	11.3%	3.0%	14,496
Remainder/Composite Plastic	1.7%	1.1%	2,154				
				Household Hazardous Waste	0.2%		262
Glass	0.8%		1,048	Oil-Based Paint	0.1%	0.1%	73
CRV Clear Glass Bottles	0.0%	0.0%	34	Water-Based Paint	0.1%	0.2%	171
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	38	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	9	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	30	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	3	Household Batteries	0.0%	0.0%	1
Non-CRV other Colored Glass Bottles and Containers	0.1%	0.1%	84	Sharps	0.0%	0.0%	0
Flat Glass	0.5%	0.7%	598	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.2%	252	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	1
				Remainder/Composite Household Hazardous	0.0%	0.0%	16
Metal	5.9%		7,574				
Tin/Steel Cans	0.1%	0.1%	125	Special Waste	4.0%		5,118
Major Appliances	0.6%	0.5%	736	Ash	0.0%	0.0%	35
Other Ferrous Metal	2.2%	1.3%	2,824	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	30	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.1%	0.1%	70	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.1%	0.2%	185	Bulky Items	4.0%	1.9%	5,081
Other Non-Ferrous Metal	1.0%	0.7%	1,307	Tire	0.0%	0.0%	0
Remainder/Composite Metal	1.8%	1.0%	2,296	Remainder/Composite Special Waste	0.0%	0.0%	2
Organics	20.0%		25,680	Mixed Residue	0.5%		699
Food	4.0%	2.0%	5,138	Mixed Residue	0.5%	0.5%	699
Palm, Succulent, Coral Tree	1.9%	0.9%	2,380				
Leaves and Grass	5.9%	2.5%	7,555	Total	100.0%		128,529
Prunings and Trimmings	3.9%	1.9%	5,014	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.6%	0.7%	776	C&D Processing Residuals			0
Agricultural Crop Residues	0.4%	0.5%	464				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			128,529
Manures	0.0%	0.0%	0				
Diapers	0.2%	0.2%	263	Sample Count			120
Textiles	2.3%	1.4%	3,005				
Remainder/Composite Organics	0.8%	0.6%	1,085				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Franchise-collected Commercial Compacted Drag-on Containers

Figure 96. Composition by Recoverability Group, Franchise-collected Commercial Compacted Drag-on, 2012

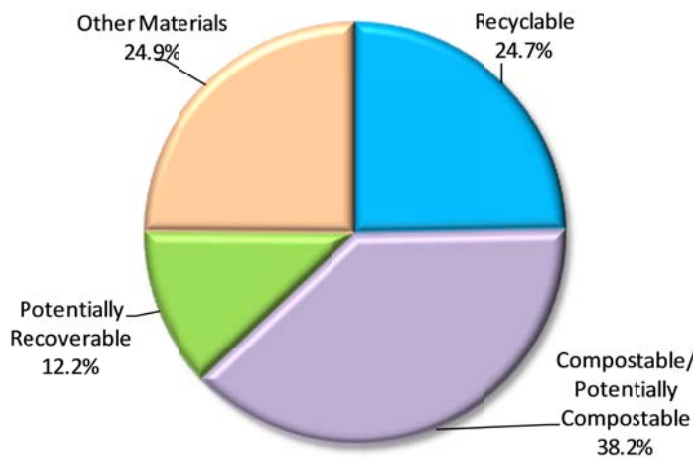


Figure 97. Composition by Material Class, Franchise-collected Commercial Compacted Drag-on, 2012

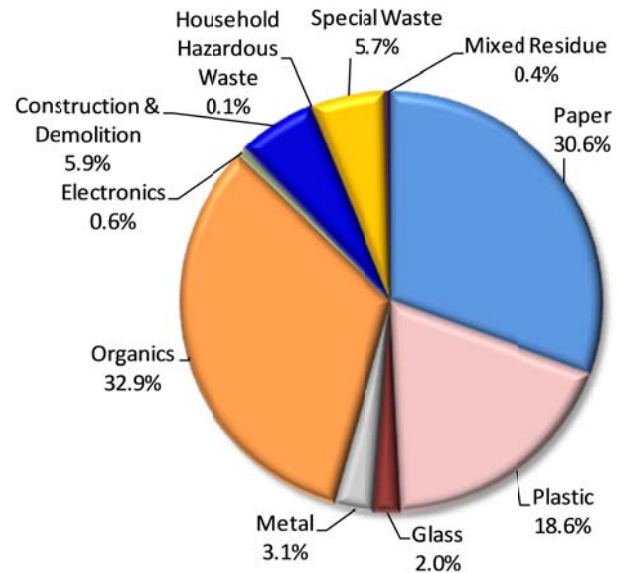


Table 85. Ten Most Prevalent Disposed Materials, Franchise-collected Commercial Compacted Drag-on, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	25.0%	25.0%	26,595
Uncoated Corrugated Cardboard	9.9%	35.0%	10,558
Compostable/Soiled Paper	8.4%	43.4%	8,930
Dirty Film Plastic	5.7%	49.1%	6,093
Remainder/Composite Special Waste	4.8%	53.9%	5,130
Mixed Waste Paper	4.7%	58.7%	5,040
Durable Plastic Items	3.8%	62.4%	4,007
Textiles	2.9%	65.3%	3,030
Remainder/Composite Plastic	2.8%	68.1%	2,974
Remainder/Composite Paper	2.6%	70.7%	2,791
Subtotal	70.7%		75,146
All other material types	29.3%		31,103
Total	100.0%		106,249

Figure 98. Seasonal Composition by Material Class, Franchise-collected Commercial Compacted Drag-on, 2012

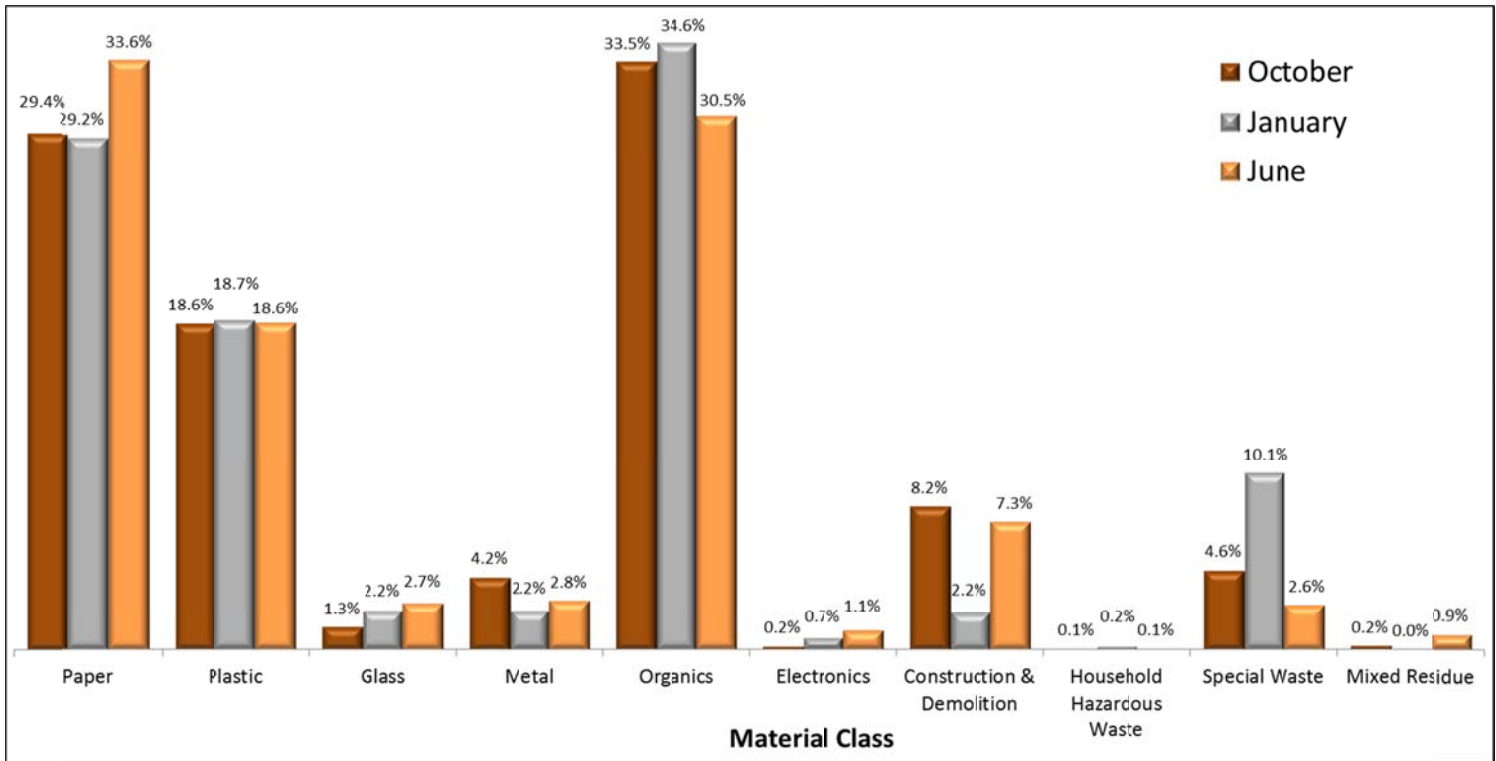


Table 86. Detailed Waste Composition, Franchise-collected Commercial Compacted Drag-on, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	30.6%		32,506	Electronics	0.6%		673
Uncoated Corrugated Cardboard	9.9%	1.9%	10,558	Brown Goods	0.2%	0.2%	227
Waxed Corrugated Cardboard	1.5%	1.0%	1,592	CRT	0.2%	0.2%	175
Paper Bags	0.3%	0.1%	337	Computer-Related Electronics	0.0%	0.0%	37
Newspaper	1.0%	0.3%	1,054	Other Consumer Electronics	0.2%	0.2%	231
White Ledger Paper	0.9%	0.3%	1,007	Video Display Devices (non-CRT devices)	0.0%	0.0%	3
Mixed Waste Paper	4.7%	0.9%	5,040				
Magazines	0.8%	0.3%	859	Construction & Demolition	5.9%		6,297
Phone Books and Directories	0.1%	0.1%	105	Concrete	0.0%	0.0%	0
Compostable/Soiled Paper	8.4%	1.0%	8,930	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.1%	234	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	2.6%	0.7%	2,791	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	18.6%		19,790	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	44	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.5%	0.1%	489	Clean Dimensional Lumber	0.8%	0.5%	836
CRV PETE Containers	0.4%	0.1%	476	Clean Engineered Wood	0.2%	0.2%	211
Non-CRV PETE Containers	0.4%	0.1%	398	Clean Pallets and Crates	0.8%	0.5%	903
Compostable Biodegradable Plastic Containers	0.0%	0.0%	39	Other Wood Waste	1.2%	0.7%	1,264
Miscellaneous Plastic Containers	1.2%	0.3%	1,238	Clean Gypsum Board	0.5%	0.6%	531
Plastic Grocery and Merchandise Bags	0.4%	0.3%	422	Painted/Demolition Gypsum Board	0.0%	0.1%	49
Clean Film Plastic	2.3%	1.3%	2,434	Carpet & Carpet Padding	0.3%	0.2%	288
Dirty Film Plastic	5.7%	1.1%	6,093	Rock, Soil and Fines	0.5%	0.3%	509
Durable Plastic Items	3.8%	1.4%	4,007	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	1.1%	0.4%	1,177	Remainder/Composite C&D	1.6%	0.8%	1,707
Remainder/Composite Plastic	2.8%	0.8%	2,974				
				Household Hazardous Waste	0.1%		106
Glass	2.0%		2,144	Oil-Based Paint	0.0%	0.1%	49
CRV Clear Glass Bottles	0.3%	0.1%	284	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.4%	0.1%	378	Vehicle and Equipment Fluids	0.0%	0.0%	4
CRV Brown Glass Bottles	0.4%	0.2%	470	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.2%	0.2%	161	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.3%	0.2%	284	Household Batteries	0.0%	0.0%	19
Non-CRV other Colored Glass Bottles and Containers	0.4%	0.2%	398	Sharps	0.0%	0.0%	1
Flat Glass	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	7
Remainder/Composite Glass	0.2%	0.1%	168	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	3
				Remainder/Composite Household Hazardous	0.0%	0.0%	22
Metal	3.1%		3,308				
Tin/Steel Cans	0.9%	0.4%	923	Special Waste	5.7%		6,099
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.8%	0.4%	824	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.1%	226	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.1%	0.1%	105	Treated Medical Waste	0.1%	0.2%	153
Used Oil Filters	0.0%	0.0%	0	Bulky Items	0.7%	0.5%	762
Other Non-Ferrous Metal	0.3%	0.1%	307	Tire	0.1%	0.1%	55
Remainder/Composite Metal	0.9%	0.4%	921	Remainder/Composite Special Waste	4.8%	2.1%	5,130
Organics	32.9%		34,950	Mixed Residue	0.4%		375
Food	25.0%	3.2%	26,595	Mixed Residue	0.4%	0.1%	375
Palm, Succulent, Coral Tree	0.2%	0.2%	195				
Leaves and Grass	1.2%	1.0%	1,326	Total	100.0%		106,249
Prunings and Trimmings	0.2%	0.1%	163	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.0%	0.1%	45	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			106,249
Manures	0.0%	0.0%	0				
Diapers	0.8%	0.4%	849	Sample Count			120
Textiles	2.9%	0.8%	3,030				
Remainder/Composite Organics	2.6%	1.3%	2,747				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Commercial

Self-haul Commercial Flat Rate Vehicles

Figure 99. Composition by Recoverability Group, Self-haul Commercial Flat Rate Vehicles, 2012

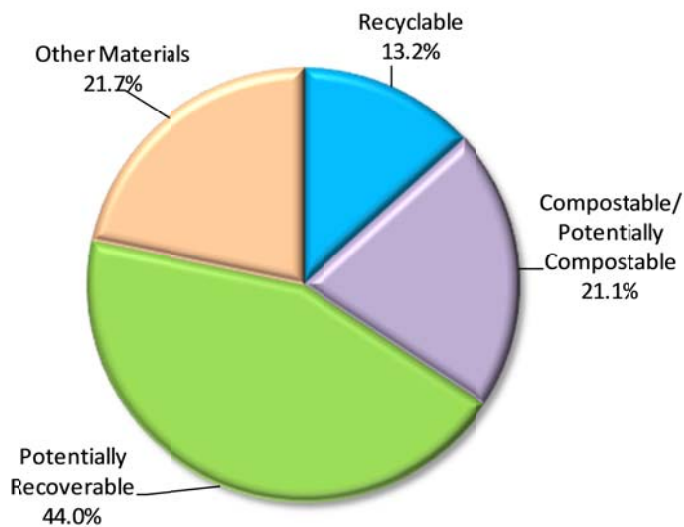


Figure 100. Composition by Material Class, Self-haul Commercial Flat Rate Vehicles, 2012

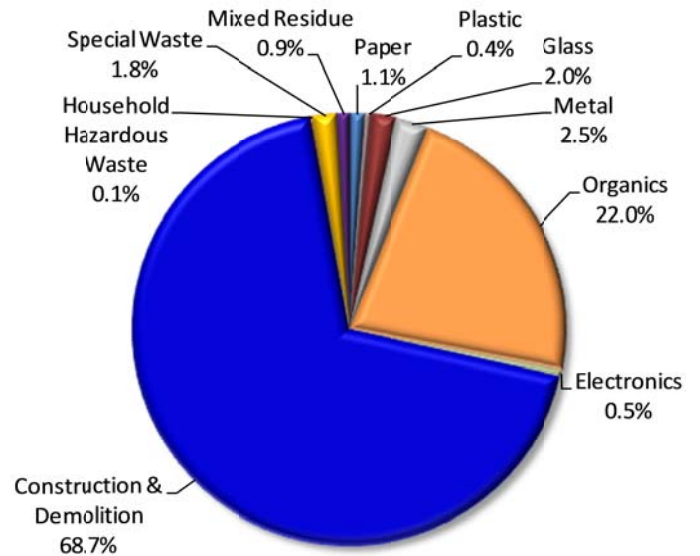


Table 87. Ten Most Prevalent Disposed Materials, Self-haul Commercial Flat Rate Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	27.0%	27.0%	10,933
Rock, Soil and Fines	9.4%	36.4%	3,809
Concrete	9.4%	45.8%	3,792
Remainder/Composite C&D	9.0%	54.8%	3,624
Palm, Succulent, Coral Tree	8.1%	62.9%	3,293
Leaves and Grass	6.2%	69.1%	2,525
Other Wood Waste	5.3%	74.5%	2,157
Prunings and Trimmings	2.8%	77.3%	1,144
Textiles	2.4%	79.7%	964
Painted/Demolition Gypsum Board	2.3%	81.9%	917
Subtotal	81.9%		33,159
All other material types	18.1%		7,307
Total	100.0%		40,466

Table 88. Detailed Waste Composition, Self-haul Commercial Flat Rate Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.1%		449	Electronics	0.5%		191
Uncoated Corrugated Cardboard	0.4%	0.1%	143	Brown Goods	0.5%	0.4%	185
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	1	Computer-Related Electronics	0.0%	0.0%	4
Newspaper	0.0%	0.0%	7	Other Consumer Electronics	0.0%	0.0%	3
White Ledger Paper	0.1%	0.1%	25	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.5%	0.2%	188				
Magazines	0.0%	0.0%	6	Construction & Demolition	68.7%		27,796
Phone Books and Directories	0.0%	0.0%	0	Concrete	9.4%	4.7%	3,792
Compostable/Soiled Paper	0.0%	0.0%	8	Asphalt Paving	0.4%	0.7%	171
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.0%	0.8%	402
Remainder/Composite Paper	0.2%	0.1%	71	Roofing Tar Paper/Felt	0.4%	0.3%	165
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.4%		178	Built-Up Roofing	1.1%	1.9%	462
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	4	Clean Dimensional Lumber	1.2%	0.7%	474
CRV PETE Containers	0.0%	0.0%	6	Clean Engineered Wood	0.9%	0.4%	376
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	0.5%	0.2%	200
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	5.3%	1.3%	2,157
Miscellaneous Plastic Containers	0.0%	0.0%	5	Clean Gypsum Board	0.8%	0.6%	314
Plastic Grocery and Merchandise Bags	0.0%	0.0%	2	Painted/Demolition Gypsum Board	2.3%	1.2%	917
Clean Film Plastic	0.1%	0.0%	25	Carpet & Carpet Padding	27.0%	9.0%	10,933
Dirty Film Plastic	0.0%	0.0%	16	Rock, Soil and Fines	9.4%	3.4%	3,809
Durable Plastic Items	0.2%	0.1%	72	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	14	Remainder/Composite C&D	9.0%	3.8%	3,624
Remainder/Composite Plastic	0.1%	0.0%	35				
				Household Hazardous Waste	0.1%		30
Glass	2.0%		790	Oil-Based Paint	0.1%	0.1%	26
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	6	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	1
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.8%	0.6%	317	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.2%	0.8%	467	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	3
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	2.5%		999				
Tin/Steel Cans	0.1%	0.1%	45	Special Waste	1.8%		746
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.9%	0.4%	352	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	3	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.5%	1.0%	626
Other Non-Ferrous Metal	1.4%	1.2%	574	Tire	0.2%	0.4%	92
Remainder/Composite Metal	0.1%	0.0%	27	Remainder/Composite Special Waste	0.1%	0.1%	28
Organics	22.0%		8,912	Mixed Residue	0.9%		374
Food	0.0%	0.0%	8	Mixed Residue	0.9%	0.5%	374
Palm, Succulent, Coral Tree	8.1%	2.6%	3,293				
Leaves and Grass	6.2%	2.0%	2,525	Total	100.0%		40,466
Prunings and Trimmings	2.8%	1.3%	1,144	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.5%	0.3%	221	C&D Processing Residuals			0
Agricultural Crop Residues	0.1%	0.2%	39				
Grass Sod	1.5%	0.9%	618	Total Including Residuals			40,466
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	0	Sample Count			241
Textiles	2.4%	1.4%	964				
Remainder/Composite Organics	0.2%	0.2%	100				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Commercial Small Vehicles

Figure 101. Composition by Recoverability Group, Self-haul Commercial Small Vehicles, 2012

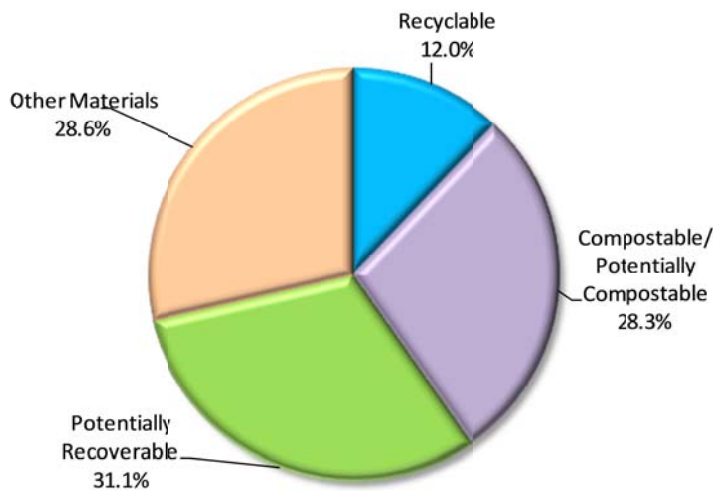


Figure 102. Composition by Material Class, Self-haul Commercial Small Vehicles, 2012

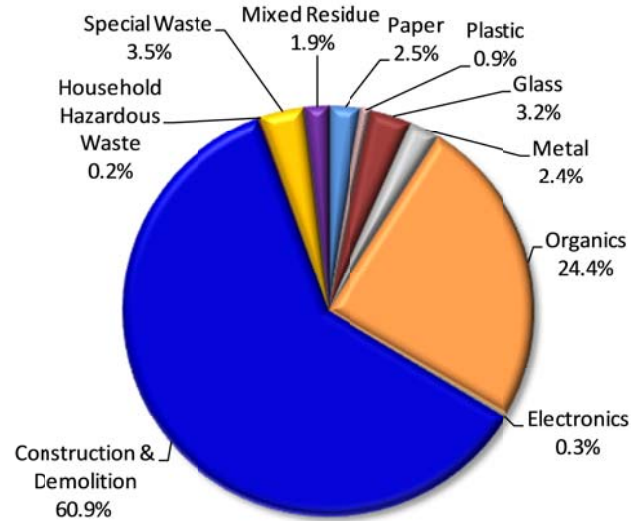


Table 89. Ten Most Prevalent Disposed Materials, Self-haul Commercial Small Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Carpet & Carpet Padding	14.7%	14.7%	4,924
Other Wood Waste	10.9%	25.6%	3,651
Palm, Succulent, Coral Tree	10.7%	36.3%	3,577
Remainder/Composite C&D	8.4%	44.7%	2,819
Concrete	7.1%	51.8%	2,367
Leaves and Grass	5.9%	57.7%	1,973
Rock, Soil and Fines	4.5%	62.2%	1,500
Prunings and Trimmings	3.8%	66.0%	1,258
Clean Dimensional Lumber	3.5%	69.5%	1,177
Bulky Items	3.4%	72.9%	1,135
Subtotal	72.9%		24,381
All other material types	27.1%		9,081
Total	100.0%		33,462

Table 90. Detailed Waste Composition, Self-haul Commercial Small Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	2.5%		847	Electronics	0.3%		84
Uncoated Corrugated Cardboard	1.2%	0.6%	405	Brown Goods	0.1%	0.1%	38
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	7
Paper Bags	0.0%	0.0%	3	Computer-Related Electronics	0.1%	0.1%	19
Newspaper	0.0%	0.0%	6	Other Consumer Electronics	0.1%	0.0%	21
White Ledger Paper	0.0%	0.0%	5	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.8%	0.4%	273				
Magazines	0.1%	0.2%	41	Construction & Demolition	60.9%		20,362
Phone Books and Directories	0.0%	0.0%	0	Concrete	7.1%	2.5%	2,367
Compostable/Soiled Paper	0.0%	0.0%	10	Asphalt Paving	0.3%	0.4%	92
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	2.2%	2.9%	743
Remainder/Composite Paper	0.3%	0.1%	105	Roofing Tar Paper/Felt	0.1%	0.1%	49
				Roofing Mastic	0.0%	0.1%	11
Plastic	0.9%		289	Built-Up Roofing	0.0%	0.0%	8
CRV HDPE Containers	0.0%	0.0%	1	Other Asphalt Roofing Material	0.6%	0.7%	198
Non-CRV HDPE Containers	0.0%	0.0%	11	Clean Dimensional Lumber	3.5%	2.0%	1,177
CRV PETE Containers	0.0%	0.0%	15	Clean Engineered Wood	2.3%	1.1%	783
Non-CRV PETE Containers	0.0%	0.0%	1	Clean Pallets and Crates	2.7%	2.2%	916
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	10.9%	3.4%	3,651
Miscellaneous Plastic Containers	0.1%	0.1%	34	Clean Gypsum Board	0.9%	0.5%	288
Plastic Grocery and Merchandise Bags	0.0%	0.0%	2	Painted/Demolition Gypsum Board	2.5%	1.1%	837
Clean Film Plastic	0.1%	0.0%	26	Carpet & Carpet Padding	14.7%	10.2%	4,924
Dirty Film Plastic	0.0%	0.0%	13	Rock, Soil and Fines	4.5%	2.3%	1,500
Durable Plastic Items	0.4%	0.2%	131	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	14	Remainder/Composite C&D	8.4%	2.5%	2,819
Remainder/Composite Plastic	0.1%	0.1%	42				
				Household Hazardous Waste	0.2%		53
Glass	3.2%		1,082	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.1%	0.1%	21	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	5	Vehicle and Equipment Fluids	0.0%	0.0%	5
CRV Brown Glass Bottles	0.0%	0.0%	12	Used Oil	0.1%	0.1%	24
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	1	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	7
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	5	Sharps	0.0%	0.0%	0
Flat Glass	2.0%	0.9%	678	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.1%	0.7%	360	CFL, Fluorescent Tube and Other Mercury-Containing	0.1%	0.0%	17
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	2.4%		787				
Tin/Steel Cans	0.1%	0.1%	36	Special Waste	3.5%		1,157
Major Appliances	0.2%	0.3%	74	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.1%	0.4%	376	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	9	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.1%	12	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	3.4%	1.5%	1,135
Other Non-Ferrous Metal	0.7%	0.3%	226	Tire	0.1%	0.1%	22
Remainder/Composite Metal	0.2%	0.1%	55	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	24.4%		8,165	Mixed Residue	1.9%		635
Food	0.0%	0.0%	8	Mixed Residue	1.9%	0.8%	635
Palm, Succulent, Coral Tree	10.7%	3.3%	3,577				
Leaves and Grass	5.9%	2.0%	1,973	Total	100.0%		33,462
Prunings and Trimmings	3.8%	1.5%	1,258				
Branches and Stumps	1.1%	0.6%	360	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.4%	0.3%	121				
Manures	0.2%	0.3%	58	Total Including Residuals			33,462
Diapers	0.0%	0.0%	0				
Textiles	2.1%	0.8%	711	Sample Count			229
Remainder/Composite Organics	0.3%	0.2%	98				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Commercial Large Vehicles

Figure 103. Composition by Recoverability Group, Self-haul Commercial Large Vehicles, 2012

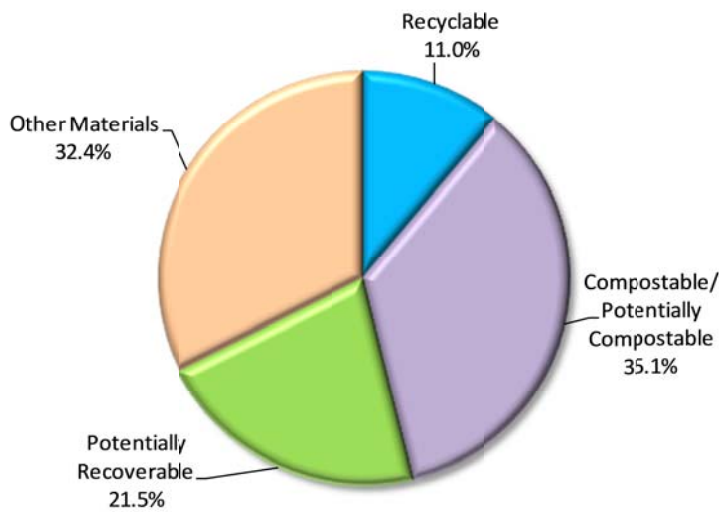


Figure 104. Composition by Material Class, Self-haul Commercial Large Vehicles, 2012

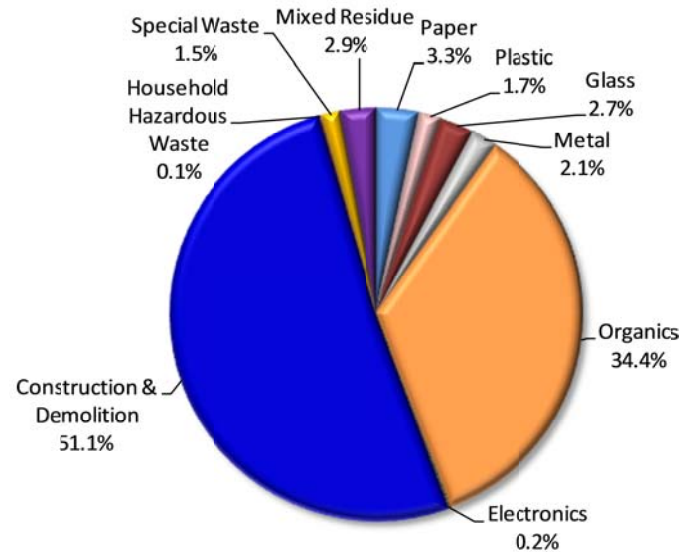


Table 91. Ten Most Prevalent Disposed Materials, Self-haul Commercial Large Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Palm, Succulent, Coral Tree	16.2%	16.2%	17,385
Other Wood Waste	8.3%	24.6%	8,936
Rock, Soil and Fines	8.0%	32.5%	8,532
Remainder/Composite C&D	6.6%	39.1%	7,017
Grass Sod	6.2%	45.3%	6,671
Leaves and Grass	5.1%	50.4%	5,433
Contaminated Soil, Street Sweepings, Drain	4.5%	54.8%	4,769
Carpet & Carpet Padding	4.2%	59.1%	4,537
Concrete	3.7%	62.8%	4,011
Textiles	3.0%	65.8%	3,201
Subtotal	65.8%		70,493
All other material types	34.2%		36,638
Total	100.0%		107,131

Table 92. Detailed Waste Composition, Self-haul Commercial Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	3.3%		3,542	Electronics	0.2%		199
Uncoated Corrugated Cardboard	1.7%	1.2%	1,815	Brown Goods	0.0%	0.1%	50
Waxed Corrugated Cardboard	0.0%	0.0%	2	CRT	0.0%	0.0%	15
Paper Bags	0.0%	0.0%	7	Computer-Related Electronics	0.0%	0.0%	19
Newspaper	0.1%	0.1%	95	Other Consumer Electronics	0.1%	0.1%	115
White Ledger Paper	0.1%	0.1%	59	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	1.0%	0.6%	1,031				
Magazines	0.1%	0.1%	72	Construction & Demolition	51.1%		54,794
Phone Books and Directories	0.0%	0.0%	0	Concrete	3.7%	4.5%	4,011
Compostable/Soiled Paper	0.0%	0.0%	46	Asphalt Paving	2.3%	3.7%	2,472
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	1.2%	0.9%	1,238
Remainder/Composite Paper	0.4%	0.3%	414	Roofing Tar Paper/Felt	1.9%	2.4%	2,073
				Roofing Mastic	0.0%	0.0%	17
Plastic	1.7%		1,826	Built-Up Roofing	1.4%	2.3%	1,538
CRV HDPE Containers	0.0%	0.0%	2	Other Asphalt Roofing Material	0.5%	0.9%	572
Non-CRV HDPE Containers	0.0%	0.0%	30	Clean Dimensional Lumber	1.6%	0.8%	1,743
CRV PETE Containers	0.0%	0.0%	23	Clean Engineered Wood	1.7%	0.9%	1,867
Non-CRV PETE Containers	0.0%	0.0%	4	Clean Pallets and Crates	2.3%	1.4%	2,430
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	8.3%	3.2%	8,936
Miscellaneous Plastic Containers	0.0%	0.0%	25	Clean Gypsum Board	0.6%	0.4%	608
Plastic Grocery and Merchandise Bags	0.0%	0.0%	14	Painted/Demolition Gypsum Board	2.3%	1.3%	2,432
Clean Film Plastic	0.8%	0.8%	818	Carpet & Carpet Padding	4.2%	1.8%	4,537
Dirty Film Plastic	0.1%	0.1%	144	Rock, Soil and Fines	8.0%	4.8%	8,532
Durable Plastic Items	0.4%	0.2%	411	Contaminated Soil, Street Sweepings, Drain Cleaning	4.5%	6.5%	4,769
Expanded Polystyrene	0.2%	0.2%	235	Remainder/Composite C&D	6.6%	3.4%	7,017
Remainder/Composite Plastic	0.1%	0.1%	120				
				Household Hazardous Waste	0.1%		131
Glass	2.7%		2,847	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	8	Water-Based Paint	0.1%	0.1%	80
Non-CRV Clear Glass Bottles and Containers	0.0%	0.1%	52	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	13
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	1.1%	0.9%	1,217	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	1.5%	1.5%	1,570	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	7
				Remainder/Composite Household Hazardous	0.0%	0.0%	32
Metal	2.1%		2,229				
Tin/Steel Cans	0.1%	0.1%	76	Special Waste	1.5%		1,621
Major Appliances	0.0%	0.0%	21	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.9%	0.5%	925	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	13	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	1.5%	0.7%	1,584
Other Non-Ferrous Metal	0.9%	0.7%	997	Tire	0.0%	0.0%	11
Remainder/Composite Metal	0.2%	0.1%	197	Remainder/Composite Special Waste	0.0%	0.0%	27
Organics	34.4%		36,873	Mixed Residue	2.9%		3,068
Food	0.0%	0.0%	27	Mixed Residue	2.9%	1.7%	3,068
Palm, Succulent, Coral Tree	16.2%	8.4%	17,385				
Leaves and Grass	5.1%	2.2%	5,433	Total	100.0%		107,131
Prunings and Trimmings	2.4%	1.0%	2,617				
Branches and Stumps	1.0%	0.8%	1,089	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	6.2%	6.1%	6,671				
Manures	0.1%	0.2%	117	Total Including Residuals			107,131
Diapers	0.0%	0.0%	0				
Textiles	3.0%	1.5%	3,201	Sample Count			153
Remainder/Composite Organics	0.3%	0.4%	333				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Military

Military Self-haul

Self-haul Military Small Vehicles

Figure 105. Composition by Recoverability Group, Self-haul Military Small Vehicles, 2012

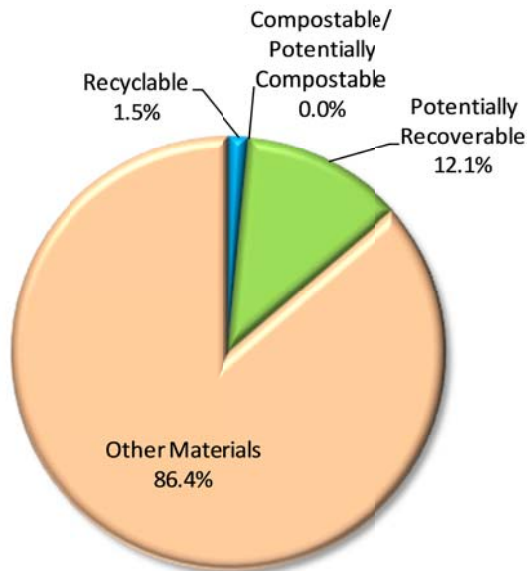


Figure 106. Composition by Material Class, Self-haul Military Small Vehicles, 2012

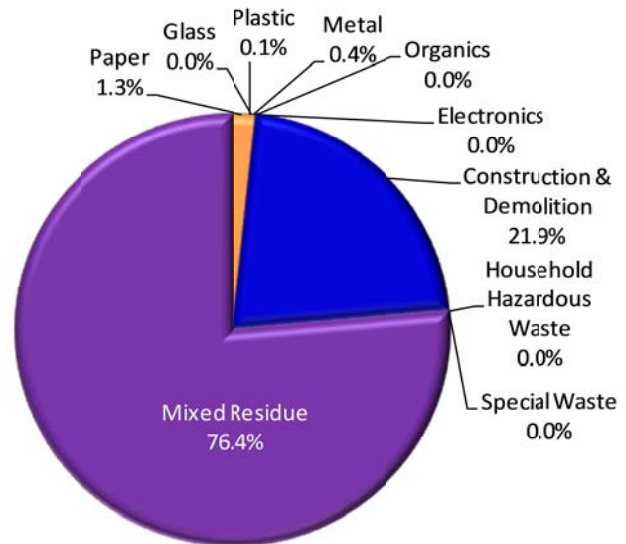


Table 93. Ten Most Prevalent Disposed Materials, Self-haul Military Small Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Mixed Residue	76.4%	76.4%	27
Asphalt Composition Shingles	12.1%	88.5%	4
Painted/Demolition Gypsum Board	4.4%	92.9%	2
Remainder/Composite C&D	3.0%	95.9%	1
Other Wood Waste	2.4%	98.3%	1
Uncoated Corrugated Cardboard	1.3%	99.6%	0
Other Ferrous Metal	0.2%	99.8%	0
Remainder/Composite Metal	0.2%	99.9%	0
Remainder/Composite Plastic	0.0%	100.0%	0
Dirty Film Plastic	0.0%	100.0%	0
Subtotal	100.0%		36
All other material types	0.0%		0
Total	100.0%		36

Table 94. Detailed Waste Composition, Self-haul Military Small Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.3%		0	Electronics	0.0%		0
Uncoated Corrugated Cardboard	1.3%	1.0%	0	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	0	Computer-Related Electronics	0.0%	0.0%	0
Newspaper	0.0%	0.0%	0	Other Consumer Electronics	0.0%	0.0%	0
White Ledger Paper	0.0%	0.0%	0	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.0%	0.0%	0				
Magazines	0.0%	0.0%	0	Construction & Demolition	21.9%		8
Phone Books and Directories	0.0%	0.0%	0	Concrete	0.0%	0.0%	0
Compostable/Soiled Paper	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	12.1%	30.1%	4
Remainder/Composite Paper	0.0%	0.0%	0	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.1%		0	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	0.0%	0.0%	0
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	0.0%	0.0%	0
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	0.0%	0.0%	0
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	2.4%	6.0%	1
Miscellaneous Plastic Containers	0.0%	0.0%	0	Clean Gypsum Board	0.0%	0.0%	0
Plastic Grocery and Merchandise Bags	0.0%	0.0%	0	Painted/Demolition Gypsum Board	4.4%	11.0%	2
Clean Film Plastic	0.0%	0.0%	0	Carpet & Carpet Padding	0.0%	0.0%	0
Dirty Film Plastic	0.0%	0.0%	0	Rock, Soil and Fines	0.0%	0.0%	0
Durable Plastic Items	0.0%	0.0%	0	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	0	Remainder/Composite C&D	3.0%	7.4%	1
Remainder/Composite Plastic	0.0%	0.1%	0				
				Household Hazardous Waste	0.0%		0
Glass	0.0%		0	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.0%	0.0%	0	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	0.4%		0				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	0.0%		0
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.2%	0.6%	0	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	0	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	0.0%	0.0%	0
Other Non-Ferrous Metal	0.0%	0.0%	0	Tire	0.0%	0.0%	0
Remainder/Composite Metal	0.2%	0.4%	0	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	0.0%		0	Mixed Residue	76.4%		27
Food	0.0%	0.0%	0	Mixed Residue	76.4%	54.5%	27
Palm, Succulent, Coral Tree	0.0%	0.0%	0				
Leaves and Grass	0.0%	0.0%	0	Total	100.0%		36
Prunings and Trimmings	0.0%	0.0%	0				
Branches and Stumps	0.0%	0.0%	0	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.0%	0.0%	0				
Manures	0.0%	0.0%	0	Total Including Residuals			36
Diapers	0.0%	0.0%	0				
Textiles	0.0%	0.0%	0	Sample Count			2
Remainder/Composite Organics	0.0%	0.0%	0				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Military Large Vehicles

Figure 107. Composition by Recoverability Group, Self-haul Military Large Vehicles, 2012

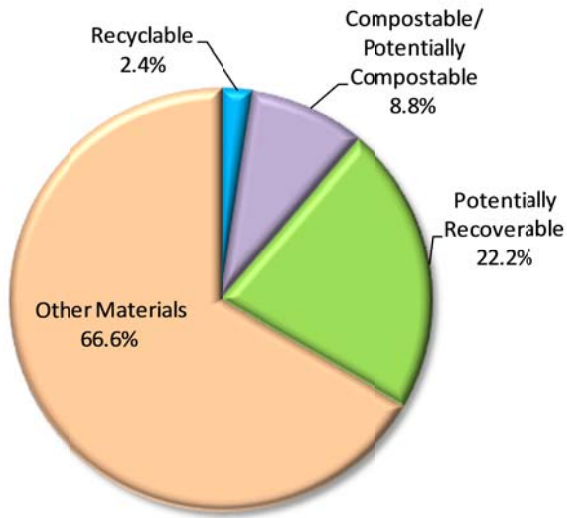


Figure 108. Composition by Material Class, Self-haul Military Large Vehicles, 2012

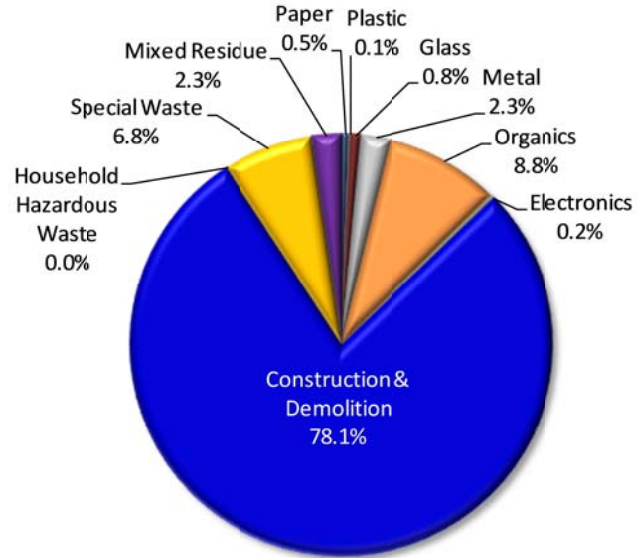


Table 95. Ten Most Prevalent Disposed Materials, Self-haul Military Large Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Contaminated Soil, Street Sweepings, Drain Cleaning	49.3%	49.3%	247
Carpet & Carpet Padding	13.6%	63.0%	68
Painted/Demolition Gypsum Board	8.2%	71.2%	41
Palm, Succulent, Coral Tree	7.0%	78.2%	35
Bulky Items	6.8%	85.0%	34
Other Wood Waste	4.0%	89.0%	20
Mixed Residue	2.3%	91.3%	12
Other Ferrous Metal	2.2%	93.4%	11
Textiles	1.5%	95.0%	8
Clean Pallets and Crates	1.5%	96.4%	7
Subtotal	96.4%		483
All other material types	3.6%		18
Total	100.0%		501

Table 96. Detailed Waste Composition, Self-haul Military Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	0.5%		3	Electronics	0.2%		1
Uncoated Corrugated Cardboard	0.1%	0.1%	0	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	0	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	0	Computer-Related Electronics	0.0%	0.0%	0
Newspaper	0.1%	0.1%	0	Other Consumer Electronics	0.2%	0.4%	1
White Ledger Paper	0.0%	0.0%	0	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.0%	0.1%	0				
Magazines	0.1%	0.1%	0	Construction & Demolition	78.1%		391
Phone Books and Directories	0.0%	0.0%	0	Concrete	0.0%	0.0%	0
Compostable/Soiled Paper	0.0%	0.1%	0	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	0.3%	0.5%	1	Roofing Tar Paper/Felt	0.4%	0.7%	2
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.1%		1	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	0.0%	0.0%	0
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	0.0%	0.0%	0
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	1.5%	2.8%	7
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	4.0%	4.0%	20
Miscellaneous Plastic Containers	0.0%	0.0%	0	Clean Gypsum Board	0.0%	0.0%	0
Plastic Grocery and Merchandise Bags	0.0%	0.0%	0	Painted/Demolition Gypsum Board	8.2%	12.0%	41
Clean Film Plastic	0.0%	0.0%	0	Carpet & Carpet Padding	13.6%	18.8%	68
Dirty Film Plastic	0.0%	0.0%	0	Rock, Soil and Fines	0.0%	0.0%	0
Durable Plastic Items	0.0%	0.1%	0	Contaminated Soil, Street Sweepings, Drain Cleaning	49.3%	42.3%	247
Expanded Polystyrene	0.0%	0.0%	0	Remainder/Composite C&D	1.0%	1.5%	5
Remainder/Composite Plastic	0.0%	0.0%	0				
				Household Hazardous Waste	0.0%		0
Glass	0.8%		4	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.8%	1.5%	4	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	2.3%		12				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	6.8%		34
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	2.2%	3.0%	11	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	0	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	6.8%	7.0%	34
Other Non-Ferrous Metal	0.0%	0.0%	0	Tire	0.0%	0.0%	0
Remainder/Composite Metal	0.2%	0.3%	1	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	8.8%		44	Mixed Residue	2.3%		12
Food	0.0%	0.0%	0	Mixed Residue	2.3%	4.2%	12
Palm, Succulent, Coral Tree	7.0%	12.7%	35				
Leaves and Grass	0.1%	0.2%	1	Total	100.0%		501
Prunings and Trimmings	0.0%	0.0%	0	Curbside Residential Recycling Processing Residuals			0
Branches and Stumps	0.2%	0.3%	1	C&D Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0				
Grass Sod	0.0%	0.0%	0	Total Including Residuals			501
Manures	0.0%	0.0%	0				
Diapers	0.0%	0.0%	0	Sample Count			9
Textiles	1.5%	2.7%	8				
Remainder/Composite Organics	0.0%	0.0%	0				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-haul Military Extra Large Vehicles

Figure 109. Composition by Recoverability Group, Self-haul Military Extra Large Vehicles, 2012

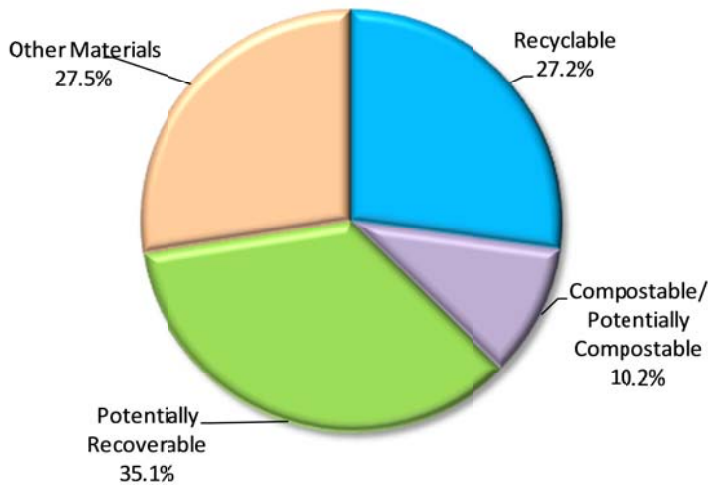


Figure 110. Composition by Material Class, Self-haul Military Extra Large Vehicles, 2012

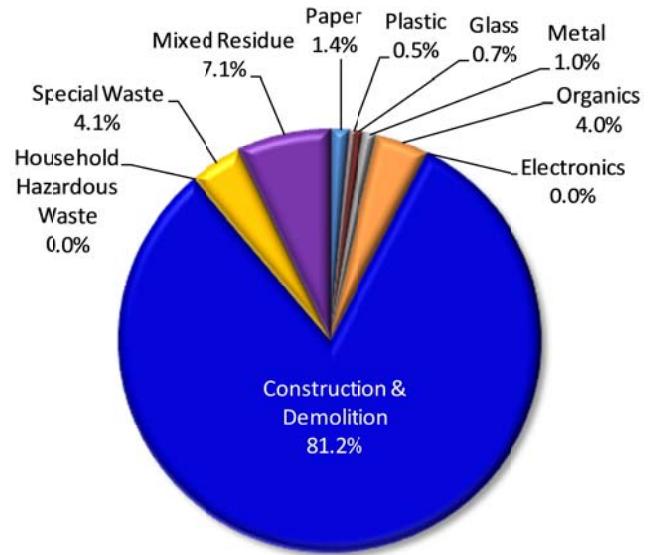


Table 97. Ten Most Prevalent Disposed Materials, Self-haul Military Extra Large Vehicles, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Rock, Soil and Fines	26.4%	26.4%	782
Asphalt Paving	24.5%	50.9%	725
Other Wood Waste	17.3%	68.2%	511
Mixed Residue	7.1%	75.2%	209
Clean Pallets and Crates	5.8%	81.1%	173
Bulky Items	4.1%	85.2%	121
Palm, Succulent, Coral Tree	3.6%	88.7%	105
Clean Engineered Wood	2.4%	91.1%	71
Remainder/Composite C&D	1.8%	92.9%	52
Concrete	1.0%	93.9%	30
Subtotal	93.9%		2,780
All other material types	6.1%		180
Total	100.0%		2,960

Table 98. Detailed Waste Composition, Self-haul Military Extra Large Vehicles, 2012

Material	Estimated Percent	+ / -	Estimated Tons	Material	Estimated Percent	+ / -	Estimated Tons
Paper	1.4%		42	Electronics	0.0%		0
Uncoated Corrugated Cardboard	0.6%	0.5%	18	Brown Goods	0.0%	0.0%	0
Waxed Corrugated Cardboard	0.0%	0.0%	1	CRT	0.0%	0.0%	0
Paper Bags	0.0%	0.0%	0	Computer-Related Electronics	0.0%	0.0%	0
Newspaper	0.0%	0.1%	1	Other Consumer Electronics	0.0%	0.0%	0
White Ledger Paper	0.2%	0.2%	5	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	0.3%	0.2%	9				
Magazines	0.0%	0.0%	0	Construction & Demolition	81.2%		2,404
Phone Books and Directories	0.0%	0.0%	0	Concrete	1.0%	1.4%	30
Compostable/Soiled Paper	0.2%	0.3%	6	Asphalt Paving	24.5%	33.5%	725
Aseptic/Milk Containers	0.0%	0.0%	0	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	0.1%	0.1%	3	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	0.5%		15	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	0	Other Asphalt Roofing Material	0.0%	0.0%	0
Non-CRV HDPE Containers	0.0%	0.0%	0	Clean Dimensional Lumber	0.4%	0.7%	13
CRV PETE Containers	0.0%	0.0%	0	Clean Engineered Wood	2.4%	2.7%	71
Non-CRV PETE Containers	0.0%	0.0%	0	Clean Pallets and Crates	5.8%	4.7%	173
Compostable Biodegradable Plastic Containers	0.0%	0.0%	0	Other Wood Waste	17.3%	16.8%	511
Miscellaneous Plastic Containers	0.0%	0.0%	0	Clean Gypsum Board	0.8%	1.2%	23
Plastic Grocery and Merchandise Bags	0.0%	0.0%	0	Painted/Demolition Gypsum Board	0.0%	0.0%	0
Clean Film Plastic	0.1%	0.1%	2	Carpet & Carpet Padding	0.8%	1.4%	24
Dirty Film Plastic	0.0%	0.0%	1	Rock, Soil and Fines	26.4%	29.6%	782
Durable Plastic Items	0.3%	0.2%	8	Contaminated Soil, Street Sweepings, Drain Cleaning	0.0%	0.0%	0
Expanded Polystyrene	0.0%	0.0%	0	Remainder/Composite C&D	1.8%	2.6%	52
Remainder/Composite Plastic	0.1%	0.1%	4				
				Household Hazardous Waste	0.0%		0
Glass	0.7%		20	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.0%	0.0%	0	Water-Based Paint	0.0%	0.0%	0
Non-CRV Clear Glass Bottles and Containers	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.0%	0.0%	0	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	0	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.0%	0.0%	0	Household Batteries	0.0%	0.0%	0
Non-CRV other Colored Glass Bottles and Containers	0.0%	0.0%	0	Sharps	0.0%	0.0%	0
Flat Glass	0.2%	0.3%	5	Pharmaceuticals	0.0%	0.0%	0
Remainder/Composite Glass	0.5%	0.9%	15	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	0
				Remainder/Composite Household Hazardous	0.0%	0.0%	0
Metal	1.0%		30				
Tin/Steel Cans	0.0%	0.0%	0	Special Waste	4.1%		121
Major Appliances	0.0%	0.0%	0	Ash	0.0%	0.0%	0
Other Ferrous Metal	0.0%	0.0%	1	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.0%	0.0%	0	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.0%	0.0%	0	Treated Medical Waste	0.0%	0.0%	0
Used Oil Filters	0.0%	0.0%	0	Bulky Items	4.1%	3.9%	121
Other Non-Ferrous Metal	0.5%	0.4%	15	Tire	0.0%	0.0%	0
Remainder/Composite Metal	0.4%	0.8%	13	Remainder/Composite Special Waste	0.0%	0.0%	0
Organics	4.0%		119	Mixed Residue	7.1%		209
Food	0.0%	0.0%	0	Mixed Residue	7.1%	7.6%	209
Palm, Succulent, Coral Tree	3.6%	3.5%	105				
Leaves and Grass	0.0%	0.0%	0	Total	100.0%		2,960
Prunings and Trimmings	0.0%	0.0%	0				
Branches and Stumps	0.2%	0.3%	5	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.0%	0.0%	0				
Manures	0.0%	0.0%	0	Total Including Residuals			2,960
Diapers	0.0%	0.0%	0				
Textiles	0.3%	0.4%	10	Sample Count			21
Remainder/Composite Organics	0.0%	0.0%	0				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Appendix G: Detailed Substream Descriptions and Tonnage Allocations

The following tables detail the RAD fields used to describe each of the study strata. RAD is the fee booth data collection and reporting system used at Miramar landfill during the study period.

Table 99. Detailed Study Universe Descriptions

Study Strata			RAD Field Names				
Waste Stream	Primary Substream	Secondary Substream	Hauler Type	Origin	Vehicle Generator Category	Vehicle Class Rating	Material Type
Residential	Single family without green waste service		City collections division	City	Packer-Front, Packer-Rear, Packer-Side	Any vehicle class rating	Refuse
Residential	Single family with green waste service		City collections division	City	Packer-Front, Packer-Rear, Packer-Side	Any vehicle class rating	Refuse
Residential	Multifamily		Franchised collected	City	Packer-Front	Any vehicle class rating	Refuse
Commercial	Front loader		Franchised collected	City	Packer-Front	Any vehicle class rating	Refuse
Commercial	Open-top drag-on containers		Franchised collected	City	Open top D/O	Any vehicle class rating	Refuse
Commercial	Compactor drag-on containers		Franchised collected	City	Compactor D/O	Any vehicle class rating	Refuse
Military	Franchise Collected		Franchised collected, and Navy contract collected	32nd St. (NAVSTA) and MCAS	Any vehicle gen category	Any vehicle class rating	Refuse and Demo
Military	Self-haul	Small vehicles	Navy vehicles	City, Non-city	Any vehicle gen category except EDCO walking floor "like" tons	Large trailer, Medium trailer, Modified pickup, Modified trailer	Refuse and Demo
Military	Self-haul	Large vehicles	Navy vehicles	City, Non-city	Any vehicle gen category except EDCO walking floor "like" tons	City PUP trailer, Heavy, Medium heavy, Truck-3 axle	Refuse and Demo
Military	Self-haul	Extra large vehicles	Navy vehicles	City, Non-city	Any vehicle gen category except EDCO walking floor "like" tons	Compactor D/O, Open top D/O, Semi/end dump	Refuse and Demo
Self-haul	Flat rate vehicle	Residential	Residential	City, Non-city	Other Vehicle	Car, SUV, Pickup, Small trailer, Double axle trailer, Combo pickup and trailer	Refuse and Demo
Self-haul	Flat rate vehicle	Commercial	Business-nonresidential, City other depts., City parks dept., City water/metro, Residents, Waste Reduction	City, Non-city	Other Vehicle	Car, SUV, Pickup, Small trailer, Double axle trailer, Combo pickup and trailer	Refuse and Demo
Self-haul	Small vehicles	Residential	Residential	City, Non-city	Other Vehicle	Large trailer, Medium trailer, Modified pickup, Modified trailer	Refuse and Demo
Self-haul	Small vehicles	Commercial	Business-nonresidential, City other depts., City parks dept., City water/metro, Residents, Waste Reduction	City, Non-city	Other Vehicle	Large trailer, Medium trailer, Modified pickup, Modified trailer	Refuse and Demo
Self-haul	Large vehicles	Residential	Residential	City, Non-city	Other Vehicle	City PUP trailer, Heavy, Medium heavy, Truck-3 axle	Refuse and Demo
Self-haul	Large vehicles	Commercial	Business-nonresidential, City other depts., City parks dept., City water/metro, Residents, Waste Reduction	City, Non-city	Other Vehicle	City PUP trailer, Heavy, Medium heavy, Truck-3 axle	Refuse and Demo
Green Waste			City collections division	City	Packer-Front, Packer-Rear, Packer-Side	Any	Green Waste

Table 100. Detailed Tonnage Summary

Substream	Tonnage
Single Family without Green Waste Service	107,310.43
Single Family with Green Waste Service	199,290.80
Multifamily	250,661.23
Curbside Residue Single Family without Green Waste Service	3,359.40
Curbside Residue Single Family with Green Waste Service	6,238.88
Curbside Residue Multifamily	823.31
Commercial Packer	225,075.78
Commercial Open Drag-on	128,528.89
Commercial Compactor Drag-on	106,249.11
C&D Residue	14,992.81
Franchise-collected Military	21,480.37
Military SH Small	35.66
Military SH Large	500.92
Military SH X-large	2,960.23
Miramar Landfill Commercial SH Small	20,172.88
Miramar Landfill Commercial SH Flat	24,485.60
Miramar Landfill Commercial SH Large	35,968.75
City Dept. Small	165.97
City Dept. Flat	51.44
City Dept. Large	47,763.22
Miramar Landfill Residential SH Small	3,748.74
Miramar Landfill Residential SH Flat	20,855.14
Miramar Landfill Residential SH Large	1,223.27
Other Landfill Commercial SH Small	13,123.29
Other Landfill Commercial SH Flat	15,928.90
Other Landfill Commercial SH Large	23,399.16
Other Landfill Residential SH Small	2,404.16
Other Landfill Residential SH Flat	13,374.91
Other Landfill Residential SH Large	784.51
Total	1,290,957.77